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PREHISTORIC IMPLEMENTS

by

Warren K. Moorehead



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"Prehistoric Implements"

A Reference Book

A Description of the Ornaments, Utensils and Implements
of the Pre-Columbian Man in America

by Warren K. Moorehead

Assisted by Numerous Authorities

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PREHISTORIC IMPLEMENTS.

A REFERENCE BOOK.

A Description of the Ornaments, Utensils, and Implements of Pre-Columbian Man in America.

BY

WARREN K. MOOREHEAD,

Assisted by

PROFESSOR G. H. PERKINS, MR. A. F. BERLIN, DOCTORS L. G. YATES AND
R. STEINER, THE REVEREND H. C. MEREDITH, MESSRS. G. E. LAIDLAW
AND M. WILKINSON, DOCTOR J. F. SNYDER, AND
PROFESSOR T. H. LEWIS.

621 Figures, Showing 3,000 Specimens.

Charley C. Drake

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THE ROBERT CLARKE CO., PUBLISHERS,
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Saranac Lake, N. Y.

PREFACE.

It is unfortunate, but I must begin this book with an apology. Because of bodily infirmities I have not been able to give the proof reading constant personal attention, and as a consequence the errata slip (pages 15, 16) is longer than it otherwise would be*.

I owe Mr. A. F. Berlin and Dr. L. G. Yates special apologies for the several errors which occur in their Sections.

A work of this nature is somewhat of a task even for one able to give it every moment of his time. It requires much research in archæological literature and a very extensive correspondence concerning rare or unknown types—even more labor than I had apprehended.

The critical reader will bear in mind that Prehistoric Implements is more or less of a pioneer work. No previous book has attempted so broad a field in an equally narrow compass. There is necessity for a text or hand-book—an illustrated catalogue—as is explained on page 17.

If Prehistoric Implements trespassed upon the ground occupied by Dr. Thomas' most excellent "Introduction to the Study of North American Archæology," it would never have been written. My book, as its name implies, is confined to a description of the stone, clay, bone and shell objects of ancient times, and treats not of cultures, monuments or peoples. Those students wishing to post themselves on these latter points should read Dr. Thomas' volume.

The professional archæologists of the museums will understand that this book is not for them.† I mention it lest some of them imagine that I am assuming to instruct those who know a great deal more about prehistoric times than I do. It is from the reports and other publications of these 27 authorities that much of the information presented herein has been obtained.

*For over 3 years I have been suffering from pulmonary tuberculosis, and it is only recently that I have been able to give "full time" to my profession. I am assured of permanent recovery.

†There are 27 men who may be considered scientific archæologists. There are 23 others connected in various capacities with the museums.

Did *Prehistoric Implements* pretend to be more than an illustrated descriptive catalogue, the omission of earthworks, tumuli, village sites and other remains would be inexcusable. Indeed, there are a few brief references which could not well be omitted. But I have endeavored to adhere strictly to my original plan and not depart from a simple description of types.

The primary object of *Prehistoric Implements* is to inform the student and beginner. It also has a secondary mission—similar to that of my *Bulletin Series*—to call attention to unknown types, and to stimulate the study of specimens in museums and private collections. It emphasizes the need of an archæologic nomenclature ; it illustrates various types from one section of the country and urges comparison with forms of another locality.

I used to regard the finer grades of flint implements more highly than any other class of artifacts. But after years of study I am convinced that the ornamental, or “ceremonial,” or unknown classes represent a broader field for archæologic study. It is a pitiful admission, and one which I regret to make in these pages, that we cannot tell positively how, why and when these slate and granite Crescents, Banners, Butterflies, Boats, etc., etc., were made. All the cabinets and museums are full of them. They are graceful, artistic and stand for the highest art in neolithic times. Why have we all neglected them ? Individually, or as a class, they are much more attractive than the chipped or pecked artifacts.

Can we not, as archæologists, get together and solve some of these problems ? We are supposed to be skillful in the interpretation of aboriginal mysteries—are we to be baffled by a bit of polished slate with a hole drilled through it ? Wherein does the power of our science lie if we must interpret through a comparison with specimens in use in historic times amongst modern tribes ? We are not true students of “pre-history” if we depend upon things purely historic. I shall feel amply repaid if this volume stimulates research and study of the ornamental or “ceremonial” class, the most interesting and important of all the handiwork of primitive man.

It will be observed that I have written for the beginning collector and student. With the exception of a few remarks on “Paleolithic Man” (which I could not resist) I have avoided discussion and obscure generalities. I have stuck to the old terms—Indians, American Race, pre-Columbian Tribes, etc. Amerind would, doubtless, have been more proper.

The Editors trust that the several hundred titles presented will afford readers all necessary references for comparative reading.

Preface.

To the Editors I am especially indebted. It would have been impossible to accurately describe the prevailing types in their regions, for I am not familiar with the areas they describe. The Sections written by these several gentlemen are the most important portions of this volume and I wish to express my high appreciation of the service the editors have rendered me. Professor Perkins has presented New England as completely as possible in the small space allowed him.

Professor A. F. Berlin is a known authority on the Eastern United States and students will learn much from his Section. I regret that some pages and illustrations had to be omitted from his paper.

Dr. Lorenzo G. Yates knows Southern California better than anyone else. His state has been neglected by writers. I have, therefore, given it more space than other areas of equal size. I must apologize to Dr. Yates, as well as to Mr. Berlin, for omitting some pages of his MS. and several figures.

Messrs. G. E. Laidlaw and Mac Wilkinson have my thanks for their labors in treating of Canada and the St. Lawrence Section.

Dr. Roland Steiner is an authority on Georgia and his contribution sheds much light on primitive conditions in the South. I thank him.

No one is more competent to write on Northern California than the Rev. Mr. H. C. Meredith. I thank him for his efforts.

Doctor J. F. Snyder, Professor T. H. Lewis and Mr. Robert Gordon have my gratitude for articles and MSS. on various and important subjects.

A number of gentlemen made for me illustrations (half-tones and wood cuts) of unique as well as typical specimens in their collections. I am much indebted to the following :

Col. Bennett H. Young, Mr. John T. Reeder, Mr. Thomas Beckwith, The Rev. James Savage, Mr. George E. Barnes, Jr., Professor W. O. Emery, Mr. C. A. Geer, Mr. Thomas Tipton, Mr. Joe A. Young, Professor Jas. A. Barr, The Rev. H. C. Meredith, Professor A. J. Waychoff, Mr. H. S. Hurlbutt.

The list of those who kindly sent notes, photographs, drawings, etc., and furnished information is too long to be reproduced in full. I thank all ladies and gentlemen who co-operated with me in making the book a success. There are upwards of 300, representing every state and territory, who described types which they thought had not come to my notice. All these communications and illustrations have been filed for future reference. They shall be permanently preserved. Some of them are :

The Rev. E. C. Mitchell, Mr. George Katzenberger, Mr. R. Wetherill, Dr. P. D. Winship, Mr. J. W. Peck, Mr. A. L. Hopkins, Prof. W. C. Mills, Mr. C. H. Collins, Dr. J. M. Brooks, Mr. W. F. Parker, Mr. C. J. Beencks, The Rev. Wm. Beauchamp, Mr. M. C. Long, Mr. Jasper Brown, Mr. James Weir, Messrs. Pogue & Pogue, Mr. H. I. Smith, Mr. Charles E. Brown, Mr. H. P. Hamilton, Mr. E. L. Guthrie, Mr. G. J. Chadd, Mr. L. S. Drew, Mr. W. C. Herriman, Mrs. R. H. Spencer, The Rev. Mr. St. Onge, Mr. C. J. Wertz, Mr. W. H. Davis, Mr. L. W. Hills, Dr. Cavey, Mr. George Williamson, Mr. A. B. Coover, Mr. H. S. Binkley, Mr. John N. Hodgkin, Messrs. Frierson Brothers, Mr. A. J. Powers, Captain Richard Wainwright

I am indebted to a number of museums, individuals and publishers who were kind enough to loan me certain plates and figures for insertion. But for this the cost of illustrating would have been largely increased. I desire to thank General G. P. Thruston and The Robert Clarke Co. for the loan of figures from "Antiquities of Tennessee"; the Hon. J. V. Brower for numerous plates from his "Quivira" and "Harahey"; Dr. F. H. Williams for figures from "Prehistoric Remains of the Tunxis Valley"; The Bureau of Ethnology and gentlemen connected therewith for permission to reproduce certain figures; Professor F. W. Putnam, of the Peabody Museum and the American Museum of Natural History, for permission to reproduce figures; the Ohio State Archæological and Historical Society for the loan of cuts; Popular Science and Dr. L. G. Yates for figures; Mr. W. J. Seever and Mr. J. M. M. Gerner, Professor H. C. Mercer and Doctor Thomas Wilson for loan of cuts.

The publication of Prehistoric Implements may bring to light specimens that have been hidden away in private collections—objects unknown or rare forms. If the book is favorably received, I trust that it will be possible to issue a new and revised edition at some future time.

WARREN K. MOOREHEAD,

SARANAC LAKE, N. Y., JUNE 4TH, 1900.

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ERRATA.

Page 19. Under Fig. 7. The Cache was found in Fountain County, Indiana, not Michigan.

Page 24. "Hon. J. V. Brower," not "Bower."

Page 25. Ninth line from bottom. "Cremated," not "crea," etc.

Page 29. "Ceramics," not "ceremics."

Page 29. Second line from top: "adobe," not "abode."

Page 31. Under cut: "Tempe," not "temple."

Page 41. 5th line from bottom: "Fig. 50" instead of "C."

Page 42. 10th line from bottom: *Pectunculus Giganteus* Reeve is the correct name of the shell.

Page 42. 8th line from the bottom: *Oliva Hiattula* Gmelin is proper name of shell.

Page 43. 7th line from top: "I have taken two from," not "two for," etc.

Page 43. 6th line from top: "Rembo" should be "Umbo."

Page 49. 1st line under cut: "Water-shed" instead of "water-head."

Page 78. 2d line from bottom: "exigencies," not "exe.," etc.

Page 85. 5th paragraph from top: "Archæologist" instead of "Anthropologist."

Page 85. 10th line from bottom: "are presented," not "is," etc.

Page 85. 4th line from bottom: "Sacred pole," not "ple."

Page 89. Second line above cut: "these were quite superior," instead of "were quite," etc.

Page 93. Fourteenth line from top: "tribes which," instead of "tribes who."

Page 93. Fig. 114 should be added to description: a, tyne of stag horn; b, harpoon or spear; c, d, pointed awls or pottery decorators; d, blunt instrument, probably for marking pottery

Page 95. Fifth line from bottom: "painted figures has been found," not "figures nor do," etc.

Page 126. 3d line from top: "pre-Columbian," not "Pre."

Page 144. Statement concerning Fig. 6 should read, "grooved entirely around axes predominate" instead of "three-fourths groove," etc.

Page 147. 2d line from top: "H. M. Whelpley" instead of "W. H."

Page 155. Fig. 225 represents a frog, not a human. Scale 1-3 not 1-2.

- Page 169. 16th line from bottom: "Moccasin Bend," not "point."
- Page 175. 8th line from bottom: "now for sale," instead of "sale now for."
- Page 191. 3d line below Flaked Implements, a comma between the words "another, in."
- Page 194. 4th line from top, "apperature" should have only one "p."
- Page 197. Last line under Fig. 288, letter "o" should be "of."
- Page 198. 6th line from top, "the" should be "a."
- Page 199. 10th line down, "Kuntztown" should be "Kutztown."
- Page 199. 14th line from top, "Brush" should be "Bush."
- Page 199. 17th line from top, "three" should be "two."
- Page 199. Fig. 299 is from Deisher Collection. Found near Kutztown.
- Page 202. 3d line from top, "hunting spears" should not be in italics.
- Page 202. Opposite cut; 3d line, Fig. 306 drops the word "was" before the word "chipped." In the lower line of the same description "Lock" should be "Loch Haven." 9th line from bottom of page, "Hunnepin" should be "Hennepin." The word "again" in the 10th line from the bottom up should be erased.
- Page 203. 2d line from top, should be "implements." "Teshous" in 10th line from bottom is printed "To the left of them," should be "Those figured on the lower part of the cut are 4 water-worn," etc.
- Page 206. 8th line from top, "exapnding," should be "expanding."
- Page 206. Fig. 311. "Squamusae" should be "squamosal."
- Page 207. Fig. 313 is shown full, not $\frac{1}{2}$ size.
- Page 209. Last line on this page should be "Bucks" and not "Buck's"
- Page 210. 8th line below Fig. 319, should be "J. M. M." not "T. M."
- Page 211. 4th line from top, "niched" should be "nicked."
- Page 214. 5th line below Pipes should be "evinced" and not "convinced."
- Page 216. Third line from top, "almost" should be "always." 8th line from bottom should be "monitor" and not "monotor."
- Page 232. 7th line from bottom for "crustaceous" read "crustaceans."
- Page 233. 2d line from top for "Tuolunne" read "tuolumne."
- Page 233. 5th line from top for "trappeau" read "trappean."
- 13th line from bottom, for "have" read "I have."
- 5th line from bottom, for "Haliotio rufescene" read "Haliotis rufescens."
- Page 235. 10th line from bottom, for "Santa Rose" read "Santa Rosa."
- Page 238. 3d line from top, for "rufes-cens" read "rufescens."
- 7th line from top, for "crass-atelloides" read "crass-atelloides."

- Page 238. 8th line from top, for "cone" read "Conr."
- Page 239. 3d line from top, for "out ine" read "outline."
- Page 240. 20th line from top, for "S. 1-2" read "S. 1-4."
16th line from bottom, for "Anacapa Island" read "Anacapa Islands."
- Page 241. 17th line from top, for "Pachy desma" read "Pachydesma"
and for "conu" read "Conr."
- Page 242. 8th line from top, for "Laxidomus" read "Saxidomus."
13th line from top, for "Liphonalia" read "Siphonalia."
12th line from bottom, for "wood" read "Wood."
- Page 244. 2d line from top, for "gray" read "Gray."
3d line from top, for "Laxidomus" read "Saxidomus."
4th line from top, for "cour" read "Conr."
- Page 246. 8th line from top, for "S. W." read "Sw."
17th line from bottom, for "Fig. 370" read "Fig. 528."
2d line from bottom, for "five-pointed" read "fine-pointed."
- Page 247. 10th line from top, for "S. 1-2" read "S. 1-1."
- Page 255. 5th line from bottom, "Jesup," not "Jessup."
- Page 256. Second line from top, "James Teit," not "Yeit."
- Page 306. 6th line from top, "We," not "I."
- Page 314. Beginning 6th line from bottom omit the word "clay."
- Page 335. Fig. 485 is inserted upside down.
- Page 365. 15th line from the top "we shall now consider," instead of "not consider."
- Page 367. 6th line from bottom "that it is impossible," not "that it it was impossible."
- Page 371. 4th line from top read "may" after the word "they." 5th line, "gaming" instead of "grinding." 9th line, "made from flint" instead of "more from flint."
- Page 377. 15th line from bottom, "were used for cupping," not "were used for pumping."
- Page 416. Sub-head, "Fraudulent," not "Fraudent."
- Page 419. 2nd line from top, "W. C. Herriman," not "H. S."
- Page 422. 12th line from top "dendritic" not "deutritic."
- Page 423. 5th line from top, "become," not "becomes."

SECTION I.

1. COLLECTIONS AND EXPLORATIONS. 2. THE SOUTH-WEST.

There are some 5450 persons in the United States and Canada more or less interested in the study of prehistoric archaeology.* Approximately, 50 are connected in some capacity with scientific museums. About 500 read publications, belong to societies or are actively engaged in serious study. The remaining 89 per cent. make collections for their own amusement, or pursue irregular studies. Nearly 4500 own collections. These vary in size from 50 to 25,000 specimens. Possibly, it is no exaggeration (in averaging) to allow 200 specimens per collection. There are upwards of 400 exhibits which contain over 4000 specimens each, and I should place the total of archaeologic material in the hands of private owners at more than 2,000,000 objects.

As has been stated in the Preface, this elementary work is issued for the benefit of the collector and student. Those of the museum clientele and a proportion of the "500 students," will discover little that is either new or valuable. But to the person of limited opportunities it may offer a few suggestions, and, I trust, aid him in naming and classifying his specimens. To such, the multitudinous reports, books and pamphlets dealing with archaeologic matters, are a bewilderment in themselves. To get a comprehensive idea of the subject he must buy and read them all, and the average man has neither the time nor the means to accomplish this end.

I am not able to properly cover the entire range of American prehistoric implements, ornaments and utensils. So many slight differences exist that to describe *all* the forms or variations one would be compelled to write many volumes instead of one. But I shall endeavor to present the characteristic types both local and general. Doubtless, many specimens are omitted which should have been figured. Especially is this true of regions which are not mentioned (or superficially so) in the reports, or where no collectors reside. As has been intimated in the Preface, I find many similar forms—especially in the more common implements—occurring in widely separated areas. As it was necessary to limit the illustrations I have omitted presenting 2 or 3 cuts of objects nearly alike, yet from different sections. But I have shown many specimens in some of the plates and the total presented is not far short of 3000. My idea is to describe the characteristic, or typical, or perfect forms, as the case may be. Yet, the common or crude objects have not been omitted.

* According to my card-index. This has been made during the past sixteen years and is supposed to contain the names of nearly all such persons.

THE MAKING OF A COLLECTION.

Space forbids more than a resume of what might be said under this heading.

A collection may be enlarged by several methods. An individual can travel and buy specimens of farmers or search the surface of village sites and fields. This is by far the best means, and a cabinet secured by personal efforts is much more highly prized than one purchased of dealers. Students of means can best increase their collections by securing local exhibits in the country. Store-keepers, doctors and school boys—hundreds of them—now make a practice of saving up all the archaeologic material found in their neighborhoods. This is true of sections in the Middle West, South and North and to some extent in Pennsylvania and New England. When gathering large quantities of specimens for museums I found this plan satisfactory and expeditious.

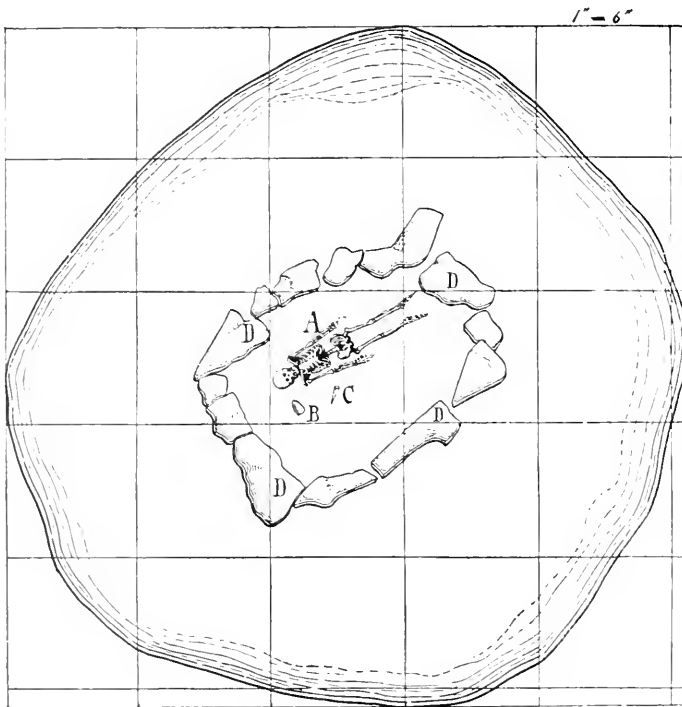


Fig. 1.

Small mound in Clermont Co., Ohio. Each square, 5 feet.

- A. Skelton.
- B. Celt, or polished stone hatchet.
- C. Bone awl.
- D. Limestone slabs surrounding the body.

For the advanced collector, or student of some experience, exploration affords pleasure and information. How to open mounds or trench village sites, or examine cemeteries, has been frequently told by the authorities and I shall only very briefly sum up their conclusions here.*

Do not attempt exploration unless you can observe the following rules:

1. Photograph (or draw accurately) the site or mound before commencing excavation.

* See Dr. Thomas Wilson's pamphlet on *Methods of Exploration*. Published by the Smithsonian Institution.

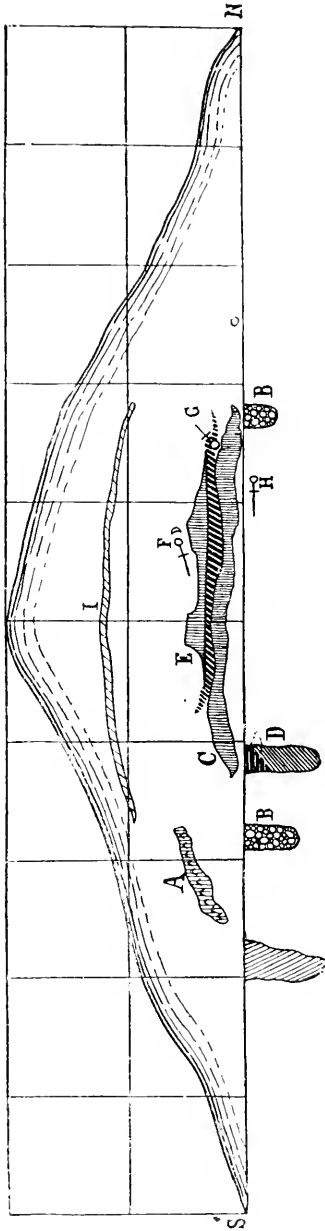


Fig. 2.

Vertical section of earth mound, Brown Co., Ohio. Each square, 5 feet.

- A. Burnt earth and charcoal.
- B. "Post holes," in floor.
- C. Heavy layer of burnt earth.
- D. Fine black earth in "pocket."
- E. Altar.
- F. Skelton.
- G. Skelton.
- H. Skelton.
- I. Layer of bark and charcoal.

2. Stake off the spot (or mound) in squares of 3, 5, or 10 feet each.
3. Run a broad trench North and South, or East and West, at least two-thirds of the diameter of the mound. Dig down to the original surface, or below. In some mounds there is a "sod line" or dark streak at the base. In others, a hard burned floor. In many others you cannot determine bottom positively and must continue on down until the undisturbed clay or gravel is reached.

4. Throw the earth behind and keep a clear space of four or five feet between the earth and the front wall or face of the trench. When through, the excavation will be nearly filled and little damage have been done to the structure. Mounds should not be opened by means of an irregular pit sunk from the summit (or center.)
5. For village sites and grave-groups the rules 3 and 4 must be somewhat changed. Long, narrow trenches sunk down as far as charcoal and ashes occur, must be run. Throw earth behind as you

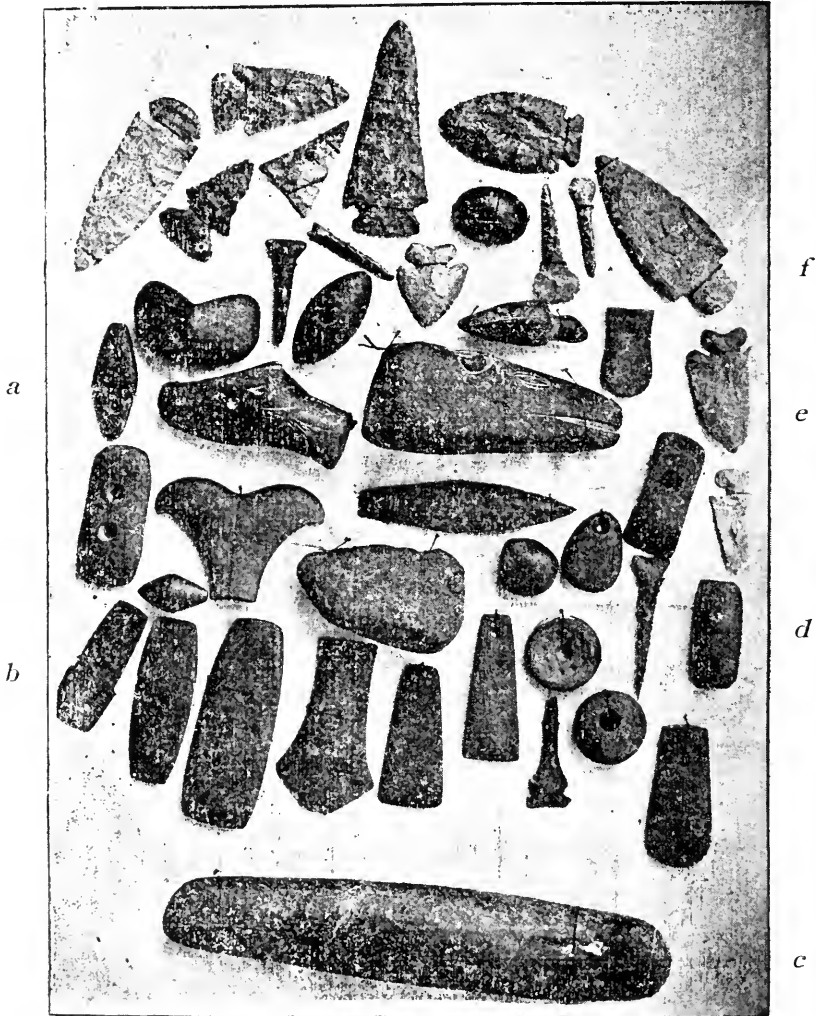


Fig. 3 Improperly arranged Collection, Ohio. S. 2-7

proceed. Excavate all ash pits carefully, as valuable objects are frequently found in them.

6. Small hand trowels or broad, dull knives, and whisk brooms are indispensable. Ordinary large digging tools need no explanation.
7. Enter all finds upon a map or ground plan and note in the squares (by numbers or letters) the skeletons or objects, etc., found.



Fig. 4. Typical collection. S. 1-4.
 owned by Charles L. Katzenberger, Greenville, Ohio. Anthony Katzenberger assisted in making the collection. It has since been added
 the son, George A.

8. Number or letter the objects or crania (or entire bones) and also designate the mound or site so that it and its contents may not become confused with the results of explorations in other monuments.
9. Photograph skeletons or objects in situ.
10. Keep a careful field catalogue or diary and retain the same series of numbers or letters in the packing boxes, etc.
11. Pack specimens for transportation so that there is no danger of breakage.
12. Shellac, or a light solution of glue, or a dozen other good preservatives for bones, pottery or soft substances. Packing paper, excelsior, string, boxes, etc.

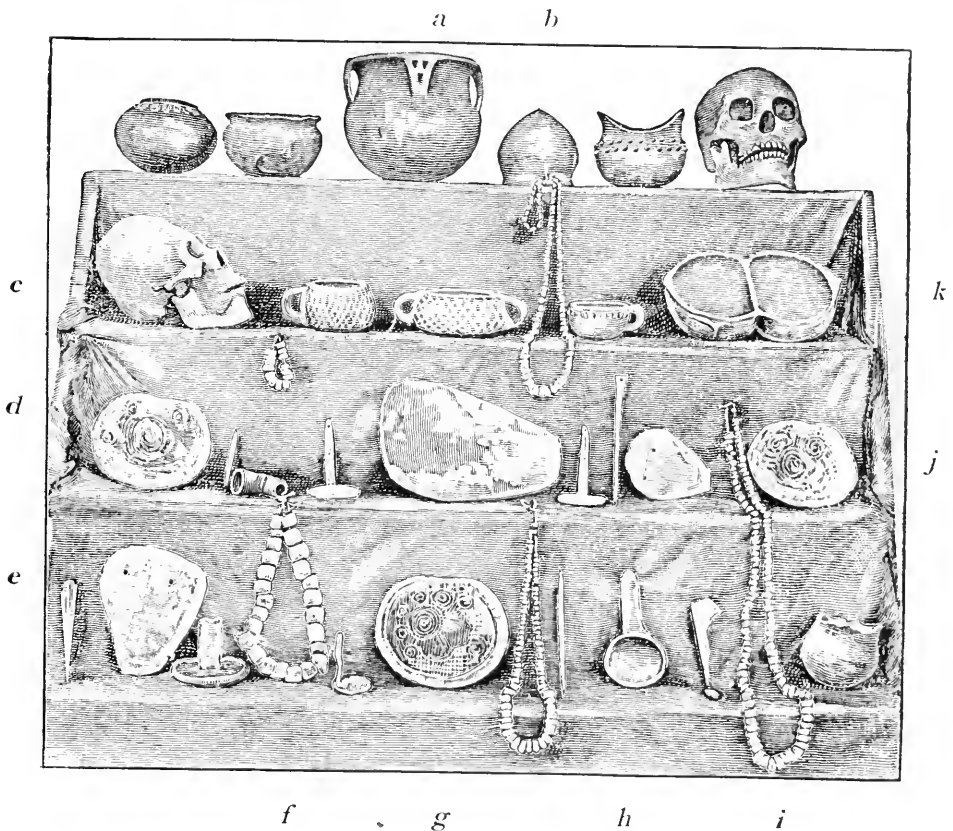


Fig. 5. Stone grave finds, Tenn. S. 1-5, (about). Mr. Geo. D. Barnes, Chattanooga.

There is subject matter for many pages in nearly every one of these rules. But the mere mention of them will have to suffice.

A collector who wishes to be well informed, or to become a student in the full sense of the word, should read the books and reports mentioned in the Preface, I will not repeat the list here. If one has time to carefully peruse even a few of them he will store his mind with a great deal of reliable useful and information.

If I were asked to describe, in as few words as possible, the collector who got the most out of his archaeologic life or inclinations I would name two gentlemen—both now dead. Either one lead an ideal life—if I am permitted to use such a term. One was a village shoemaker in southern Ohio. The other, a business man in a western city. Both were intelligent, loved nature, were kindly, courteous, and stood high in their respective communities. Neither collected as a fad merely, but, on the contrary, was well versed in current literature on the subject. They employed spare days in acquainting themselves with local sites where specimens could be found in large numbers; they occasionally explored mounds or graves; they found

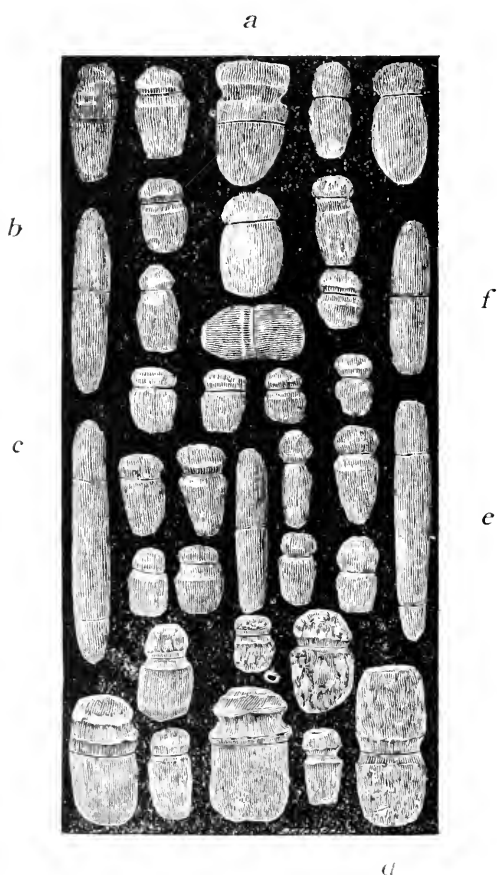


Fig. 6. Neat arrangement of axes and rollers (or elongated pestles), Tenn. S. 1-6. Mr. G. D. Barnes, Chattanooga.

great satisfaction in securing the results of farmers' spring or fall plowing; they watched Dr. Smith's rival collection, and bought him out when he was hard up; they loved to tramp all day along the streams or over the hills, and returned with a keen relish for a substantial supper, after which they settled themselves down to their pipes and reminiscences.

These two men, I say, got much out of life. Their collecting meant more than the mere purchase of a rare object. Readers can do no better than to emulate their examples.

Figure 1 is a ground plan of a typical mound. Figure 2 is a cross section of another mound. It is not difficult to make such diagrams or maps and they add to the scientific value of a collection. Little was found in either of these mounds, and for that reason I select them as illustrations. The "great finds" are seldom made. Indeed, for the average collector, village sites offer a more productive field. Certainly more is to be found on and in them. Having begun the opening of a mound, it must be completed, whereas in a village site the student is not compelled to examine the entire field.

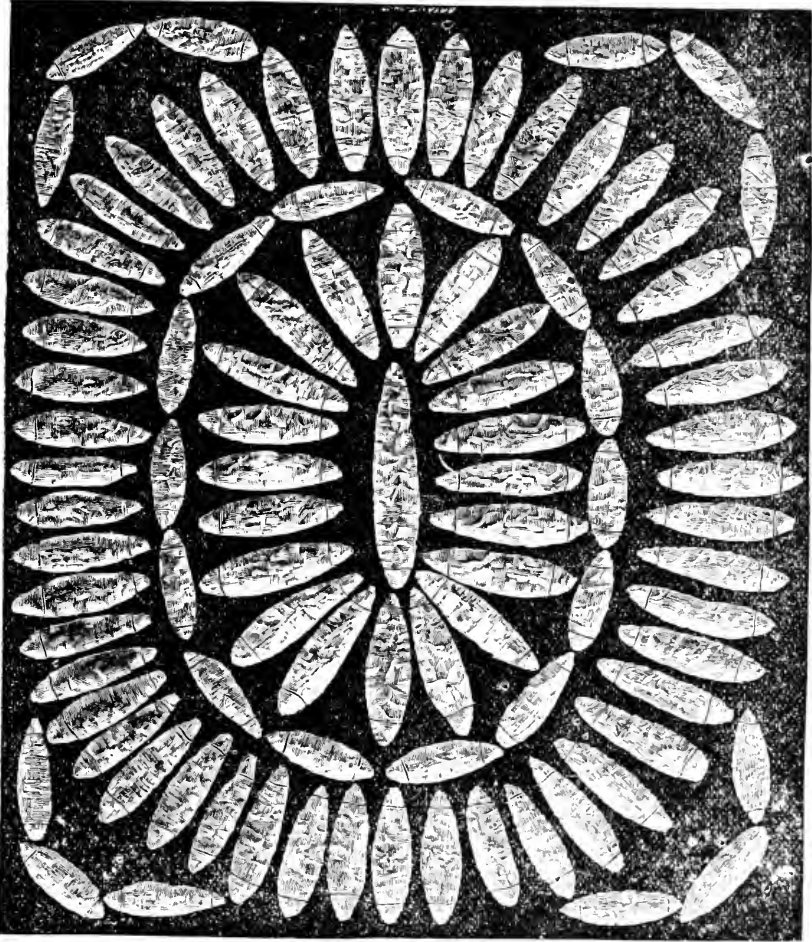


Fig. 7. Card of cache implements, well grouped. Michigan, S. 1-5. The Rev. Mr. E. C. Mitchell, St. Paul.

Really, the mounds should be examined by scientific museums. Collectors had best let them remain undisturbed. After all, mound exploring is a delusion and a snare. Out of some 400 which I have seen opened, less than 50 yielded many objects. That is, from the collector's point of view,

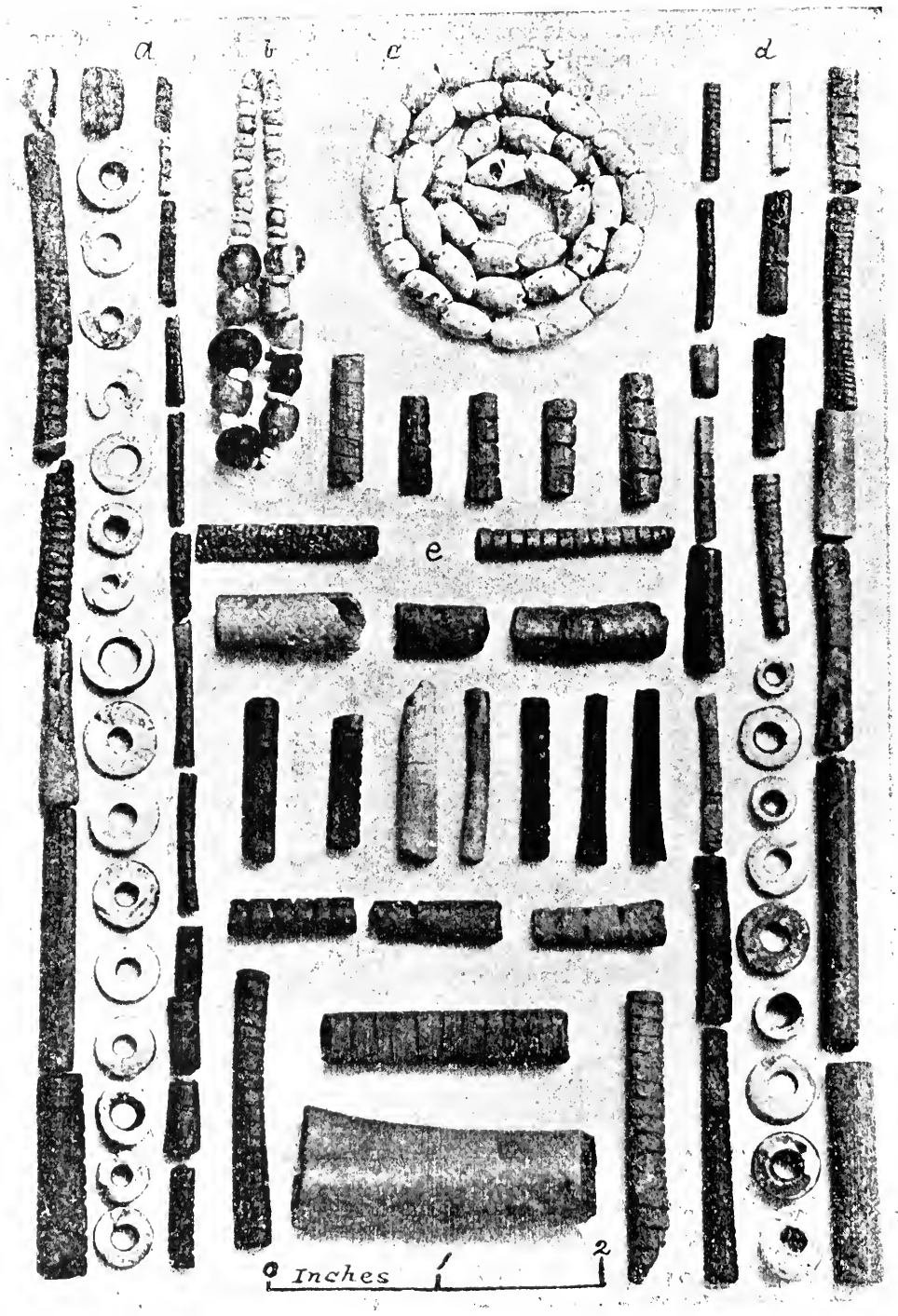


Fig. 8. Bone and shell beads from sites on the plains mounted to best advantage. Kansas Historical Society collection. (Scale shown). Courtesy of the Hon. J. V. Bower, St. Paul.

the other 350 did not justify the time, money and labor expended in their examination. Collectors have a sufficiently broad field in surface hunting, buying of farmers, etc.

THE KEEPING OF A COLLECTION.

As in everything else, one may be neat and orderly in arranging his exhibit, or he may be the reverse. On this score I shall write as much as space permits.

I present, in Figs. 3 to 9, several exhibits. All of them contain good, fine, or unique specimens. It would be difficult to improve upon the arrangements exhibited in Figs. 7 and 8, save in a large public museum where certain uniform schemes of grouping display and scientific accuracy were followed.

Fig. 3 has evidently been hastily mounted. Not a few collectors exercise little care in keeping and exhibiting their specimens.

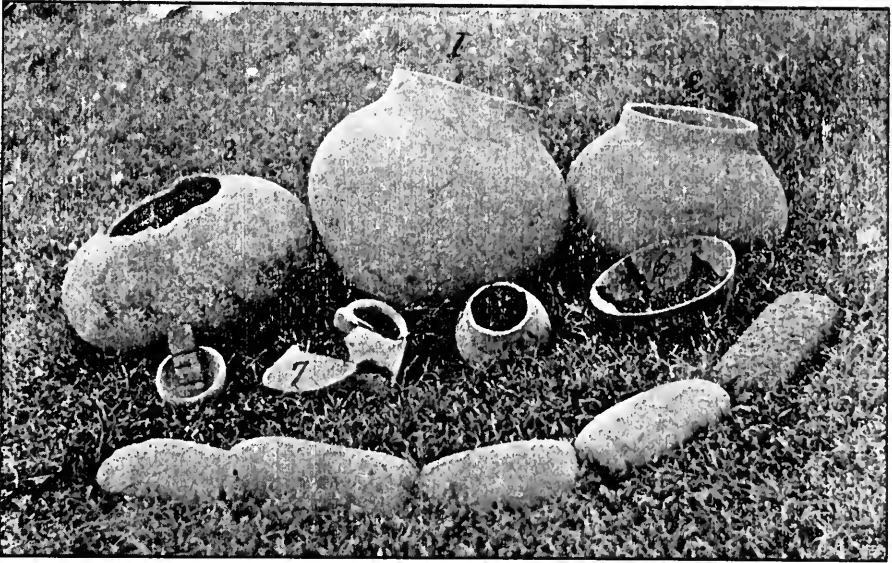


Fig. 9. Ollas, broken bowls, etc., from adobe (pueblo) ruins, near Phoenix, Arizona; valley of the Salt river. S. 1-6.

1 and 2, water coolers. The same form is in use among Mexicans and Indians today; 3, jar in which ashes and burnt bones were found. (Doubtless a cremated body.)

Fig. 4 is a section of Mr. Katzenberger's large collection. It is much more neatly arranged, although some changes might properly be made. Figs. 5 and 6 are yet better. They are a portion of Mr. Barnes' southern collection. (All these various groups will be described in their proper sections.) It will be observed that he has put his stone-grave finds such as engraved shells, beads and pottery in one group; his axes, etc., in another. A little more space between the stone tools in Fig. 6 would have brought out the details more clearly.

Fig. 7 is a cache of splendid flint blades from Michigan—collection of the Rev. Mr. Mitchell. He has grouped them simply but effectively. Any class of flint objects in a collection of average size might be displayed in this manner. In cabinets of more than 2000 specimens the knives, or spear-heads, or perforators, or other forms might be sorted out and fastened to cardboard; the largest ones being in the center and the smallest forming crescents or other designs in the corners.

Bone or shell beads are not highly esteemed by most collectors. But they can be so displayed as to make them attractive. In Fig. 8 is illustrated an exhibit of beads in the Kansas Historical Society Museum.* It is a very good presentation of the various kinds of ancient beads found on the Plains. Eastern or southern bead finds should be mounted in this manner.

Most collections are not larger than can be accommodated in an ordinary book case. Special cabinets cost little more than "stock book cases." Furniture men or the more skillful carpenters of any community are able to



Fig. 10. Jar of coiled ware, New Mexico. S. 1-4. These were made by coiling long, thin strips of suitable clay around some plain jar, basket, stone or other object, of the desired shape.

make them. For 500 to 1000 specimens: 5 feet high; 4 feet wide; 5 shelves (sloping) ranging from 7 to 10 inches apart; 2 drawers in base for heavy objects or poor and duplicate specimens; glass doors, etc. For 1200 to 3000 specimens: 6½ feet high; 5 feet wide, strip through center (top to bottom) to support shelves; glass doors and ends, etc. Place the cabinet in a very light room—not in a dark corner, as many collectors do.

AS TO THE ARRANGEMENT OF SPECIMENS.

Plan to have sloping shelves in the cabinet and devote each shelf to certain kinds of objects. Canton flannel (or thin cotton strips) is sufficiently rough to prevent ornaments, flint implements or other small artifacts from slipping. They can be placed in rows, circles or other artistic groups according to the fancy of the collector. When not sewed on cardboard the specimens can be more conveniently handled; but there is great danger of breakage. Light objects on a dark background, or dark objects on a light background will bring out the details of workmanship into strong relief.

* I am indebted to the Hon. J. V. Brower for the loan of this and other plates.

Put heavy axes, pestles or mortars on the bottom shelf. Pottery (whole) can be arranged on top (outside) and protected by 3 or 4 wires strung along in front. The finer, or more delicate, whole pottery can be placed on one of the shelves.

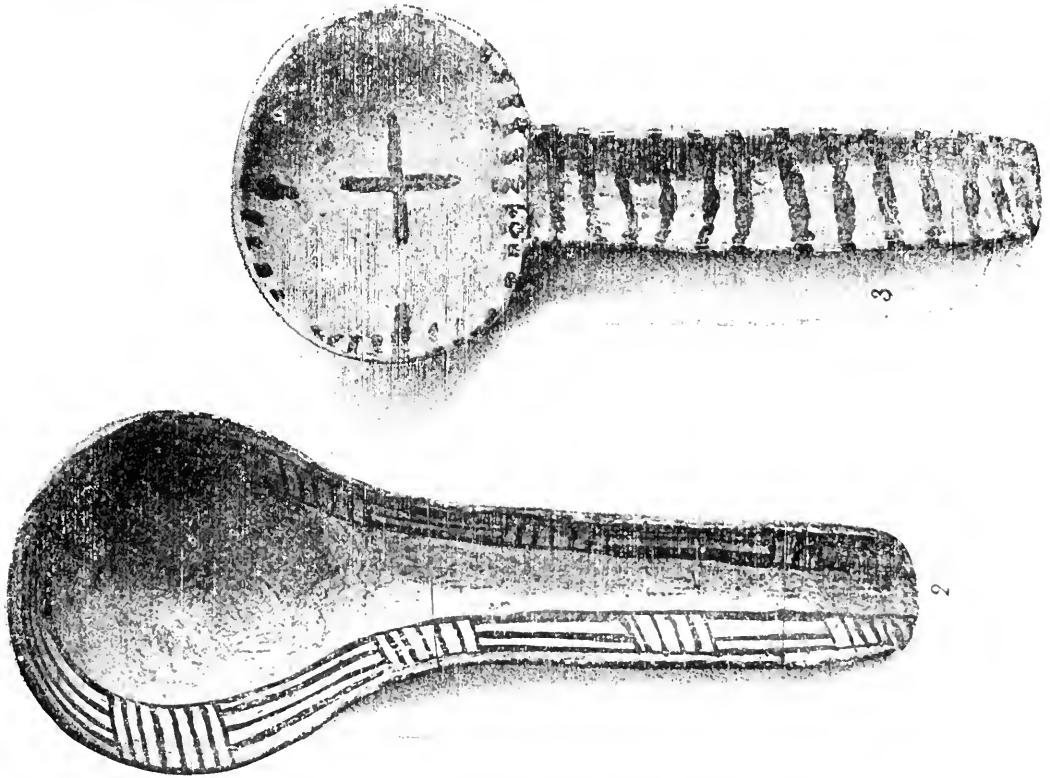
Number light specimens with India ink; dark ones, with white paint. Record in a book the numbers, locality, etc. Large, unsightly labels deface specimens and are an abomination. All scientific museums paint numbers on the specimens and record same in books or keep a card index. On large specimens the site may properly be painted or inked, as:

But small objects look

1417 Allen Co., Mich.

better if only numbered.

Spool cases, or similar sets of drawers, are convenient for duplicates or common forms.



Figs. 12 and 11. Canon de Chelly ruin, New Mexico. S. 1-1. "Form singular, being an accurate copy of a gourd split longitudinally. The pattern consists of parallel lines in two directions at right angles to each other. This arrangement of the lines suggests that the ornamentation is derived from some plaited object." From Nordenskiöld's plate XXX. From a grave at Step House, Southwestern Colo.

THE SOUTHWEST.

By this term I mean all of the country included in the Colorado river basin and its tributaries; the Rio Grande valley and sections of Nevada.

The literature of the Southwest is extensive. Baron G. Nordenskiöld's "Cliff Dwellers of the Mesa Verde" ranks first. There are numerous books, reports and papers by Cushing, Fewkes, Holmes, Bandelier, Hodge, Bancroft, Chapin, Peet, Pepper, Mindeleff, etc. Readers are referred to the Smithsonian and Bureau of Ethnology reports, the American Anthropologist, etc., for technical descriptions.



Fig. 13.



Fig. 15.

Fig. 13. From Rio Verde Cliff-houses, Arizona. S. 1-2. The "double vessels" like Fig. 13 are rare.

Fig. 15. From the Chaco group 70 miles south of Farmington, New Mexico. There are 17 ruins in this group. S. 1-2. A few red-ware ceremonial vessels may excel this mug or "stein."



Fig. 14. From Rio Verde Cliff-houses, Arizona. S. 1-2.

Wishing to avoid all controversies; for this volume is descriptive of implements, weapons, ornaments, etc., rather than of tribes, monuments or cultures, I shall attempt no classification of the stone, adobe, boulder, cave or other ruins found in such prodigious numbers in the famed Southwest. Investigators differ concerning them. Some say there are four distinct types, representing four tribes or epochs. Others maintain that cliff-houses are

* Mr. G. H. Pepper has spent four seasons at the Chaco group, for the American Museum of Natural History. His discoveries of pottery, turquoise, wooden tools, etc., were remarkable.

but fortified pueblos and are to be grouped as belonging to one culture—similar throughout the whole section—along with boulder and adobe ruins. A few consider the cave dwellings (excavated rooms) as marking one epoch or tribe different from any other: they also recognize the boulder ruins as distinct, but group all cliff, valley, or mesa ruins of dressed stone or adobe bricks under one head. Thus, when the authorities disagree, how shall we laymen decide?

The Southwest is a field very extensive and rich. Roughly, it is 700 by 500 miles in extent and contains thousands of ruins and sites.* Man has but a faint conception of its archaeological treasures. Of all sections in this book it is done the least justice. The Gila, Upper Colorado, Lower Colorado, San Juan, Pecos, La Plata, Animas, de Chelly, Salado and a dozen other valleys—on each might be written a volume or two.



Fig. 16 Bowl from cliff-ruin in Rio Verde region, Arizona S 1-2. Bowls of this type are common in the cliff-dweller's country, but the decorations on this are striking

CERAMICS.

Pottery in the Southwest is very numerous and takes various forms. The decorated bowls, urns, jars, bottle forms perforated for suspension, ladles and many other types are peculiar to the Southwest. The percentage of types similar to those discovered in Mexico or elsewhere is very small. It is also noted by observers that with the sole exception of plain jars, bowls

* Northern Utah to Gulf of California; Eastern California (state) to the Rio Grande, Texas.

and dishes, none of the forms are like those found in such numbers along the Mississippi river, or at any point in the East.

Fig. 9 shows a number of broken bowls or dishes and some large jars or ollas. Some mano stones or grinders (used upon the large flat metattles for crushing grain) are lying in the foreground.

These large ollas were used for several purposes. They are quite porous

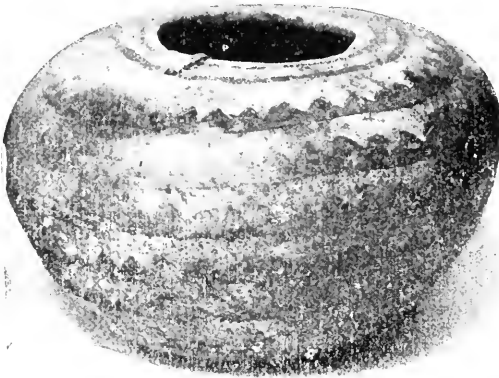


Fig. 17. Bowl from a cliff-ruin in the Rio Verde canon, Arizona, S. 1-2. A common form.



Fig. 18. This jar has enclosed perforations for suspension. It was found in a boulder-ruin near Farmington, New Mexico. The decoration does not extend to the base; a feature sometimes noted in Southwest pottery. S. 1-2.

and make excellent water jars, keeping their contents cool even in the extreme heat of summer. Occasionally, the remains of cremated bodies were placed in them. The same form, but of coiled ware, is common in the cliff-houses. Ollas of valley, desert or cliff ruins are sometimes very large. I have found specimens more than 2 feet in height and 20 inches in diameter. Broken fragments of thick ones at least 25 by 30 inches have been reported.

These largest ones were doubtless for the storage of grain, seeds, roots, etc. So far as I am aware but few of the coiled ware jars and ollas are found in the numerous ruins of pueblos of southern Arizona and New Mexico. Most of valley or desert jars are plain, although some specimens of coiled ware occur.

In the cliff-houses and about the boulder ruins, and in stone pueblos of the high mesas, are found many beautiful examples of the potter's art. They are made from the best clay, well tempered and artistically decorated. I present a characteristic series from widely separated ruins in the Southwest. I would call special attention to Fig. 15 as being one of the finest specimens that I have ever seen.

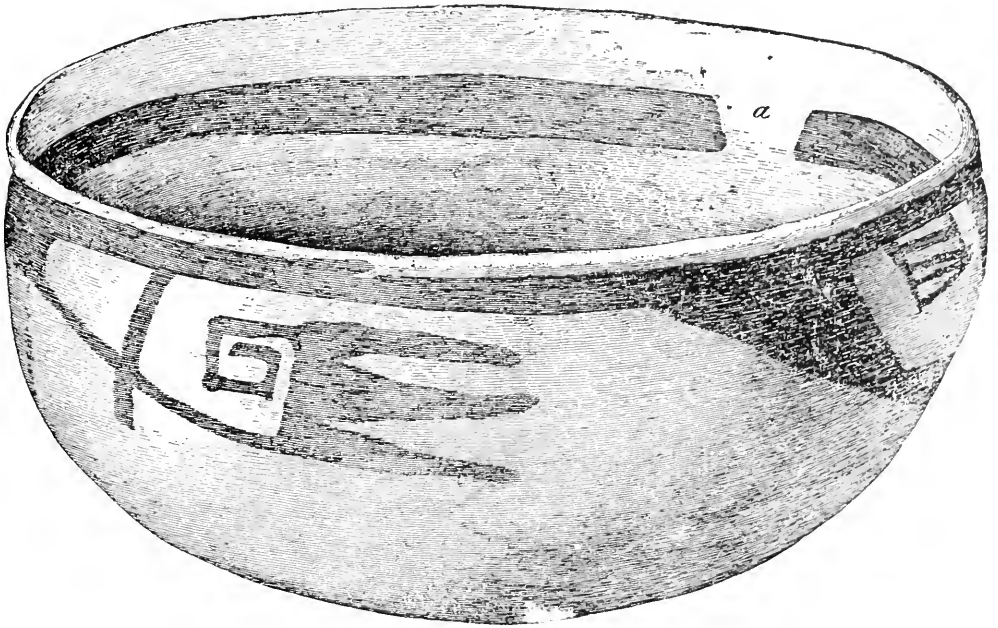


Fig. 19 Ancient Cibola Eating Bowl, showing (a) "exit trail of life." S. 1-1. Found in a Salt river ruin, near Temple, Arizona, by Prof. Cushing in 1888.

Dippers and ladles such as Figs. 11 and 12 are common. Plain ones are rare. Of the mug or cup forms Nordenskiöld and others figure many. They are usually low and broad, not high like Fig. 15. But, fully one half of them are as perfect and well made as Fig. 14.

EFFIGIES AND UNKNOWN OBJECTS OF STONE.

The famous "desert region" proper (Southern Arizona and New Mexico), and particularly the southern portion of Arizona, abounds in certain effigies or ceremonials, or unknown objects which have, as yet, not been described by archaeologists. There are many of these peculiar specimens which are not found elsewhere in the Southwest. Some of them occur in Southern California or Old Mexico. A few of the more simple forms have been dis-

covered in the cliff-ruins to the north of the Gila, Salt and Verde regions. Absolutely nothing is known regarding them. I shall present figures of twelve or fifteen in order that collectors may be able to recognize the forms in the future, but shall attempt no solution of the purpose of their manufacture. A few of these things are made by the Pima and Maricopa Indians for sale. But these are in imitation of the old ones, and to say that any con-



Fig. 20. From the Desert ruins near Mesa, Arizona. S. 1-2.



Fig. 21. From the Desert ruins near Mesa, Arizona. S. 1-2.

Fig. 20 is an owl and Fig. 21 a bear.

siderable numbers of them are modern products, is to assume a position substantiated by neither reason nor the facts in the case.

They are of malpi, tufa or other volcanic and lava stones; seldom of granite. They are found about the ruins, along the old irrigating canals, or on the desert near no ruins. Some of them are readily recognized as being owls, Gila monsters, bears, lizards, turtles, wolves, etc. Others are rude or manifestly made grotesque so that we cannot distinguish them.

Fig. 22 is a group of various objects from the pueblos of the Salt Valley. Ordinary axes are on the top shelf, *a*. Those marked *b* are several perforated stones (like rings) and two double mortars. These latter are very small and hardly deserve the name of mortar. But what shall we call them? At *c* there is another of the rings, and a peculiar cup stone having a rude handle, or projection at the top. In the center there is a long stone decorated with a rude human face. It has been suggested that it represents phallic worship. In the lower shelf (marked *d*) are two oval stones having smooth bases and handles. Doubtless, they were used in preparing clay for the manufacture of pottery. At *e*, a small ring, and two "mortars", or unknown objects. The third specimen to the right of *e* is perforated.

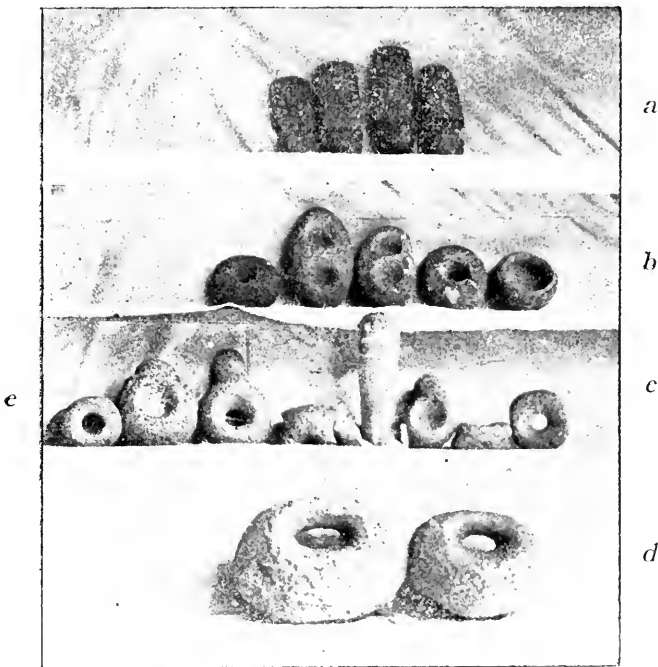


Fig. 22. From ruins near Tempe, Arizona S. 1-5.

Figs. 23 and 24 should be studied by some one competent to classify the effigies of the Salt Valley. 23 may be a turtle and 24 a bird. I do not know. 23 is remarkable in that it is slightly hollowed out as if designed to hold a small quantity of liquid, or "ceremonial food," or something else.

Fig. 26 is an owl, but Fig. 25 is unknown.

Fig. 27 is a common ring or circular object, perforated. These are very common in the Southwest and range from one inch to twenty inches in diameter. They are seldom thin, usually thick and rounded on the edge, not flat like the Eastern discoidals or chunjee stones. Fig. 28 is unknown.

Fig. 29 is a metatle having legs. The common form of a metatle is a flat or hollow stone from 10 to 30 inches in length upon which the mano or

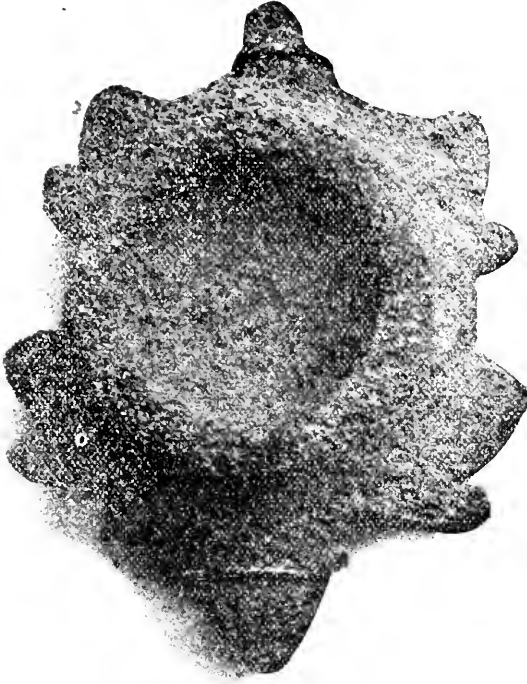


Fig. 23. From near Phoenix,
Arizona. S. 1-1.

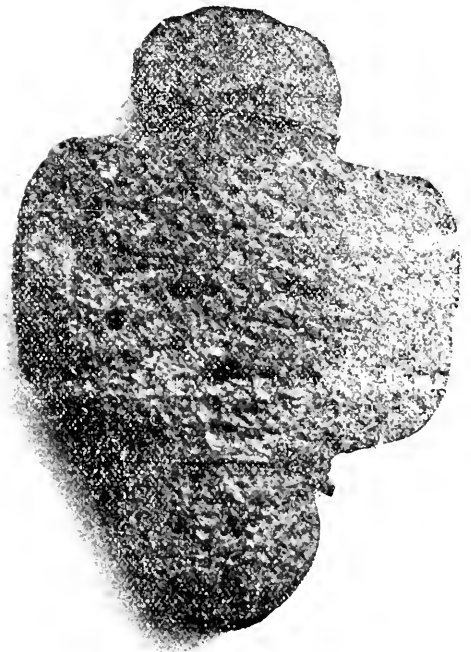


Fig. 24. From near Phoenix,
Arizona. S. 1-1.



Fig. 25.

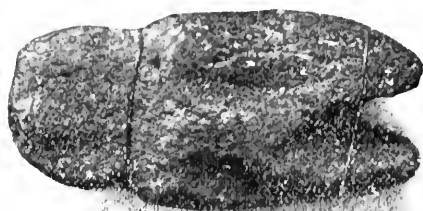


Fig. 26.

From near Mesa, Arizona. S. 1-2.

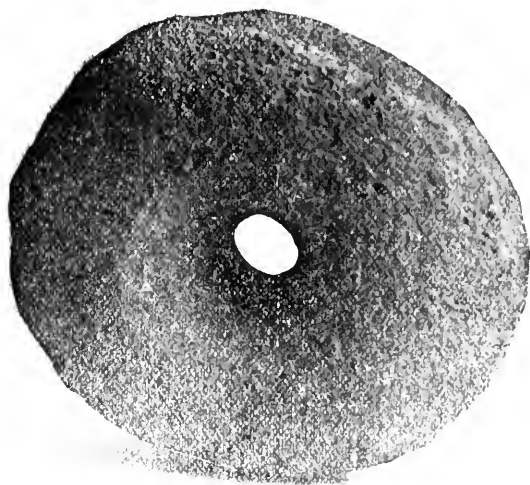


Fig. 27. From an old canal
near Phoenix, Arizona. S. 1-2.



Fig. 28. From an old canal
near Phoenix, Arizona. S. 1-2.

hand-stone was rubbed back and forth to crush grains, seeds, roots, etc. Circular mortars like those of the coast regions are also found, but I shall show none of them as the California varieties present a greater range of form, material, and workmanship and are to be fully illustrated in the Pacific Coast Section.

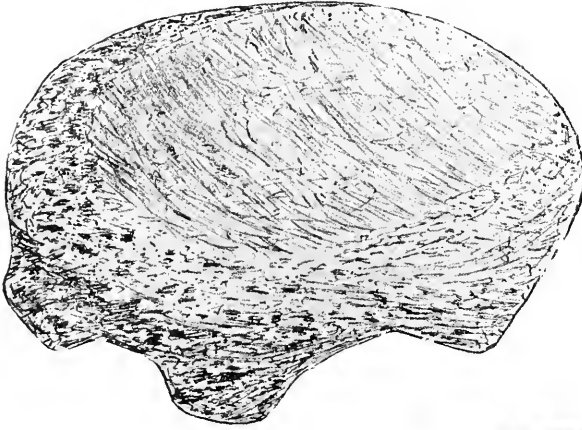


Fig. 29. Metatle with legs. From near Alhambra, Arizona. S. 1-2.

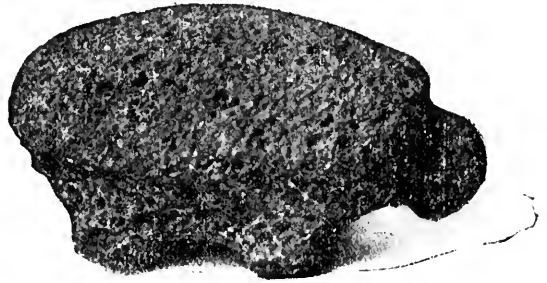


Fig. 30. From near Phoenix, Arizona. S. 1-2.

Fig. 30 is taken to be a turtle effigy or idol.

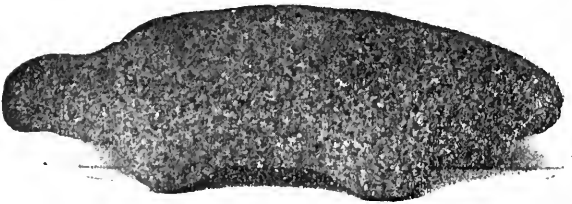


Fig. 31. From a site near Tempe, Arizona. 1-3.

Fig. 31 is ruder and if it does not represent a turtle or lizard, I do not know what it stands for.

Fig. 32. From a pueblo south of the Salt river, near Phoenix, Arizona. S. 1-1.

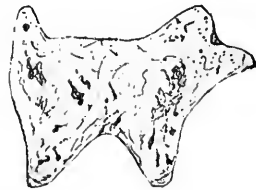


Fig. 32 is a small wolf effigy in pottery. Little pottery animals and reptiles are exceedingly common in the Southwest.

Many grotesque human idols, cut out of various lavas, are found in this region. Governor Prince has a great many of them; something like 100.* Mr. Tait, of Phoenix, has over 40 in his collection; Mr. R. S. P. has 23; Professors Cushing and Fewkes discovered a number in their explorations.

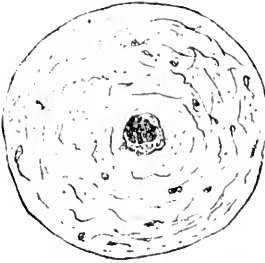


Fig. 33.

Fig. 33. Spindle whorl of pottery. Very common in pueblo ruins. S. 1-1.

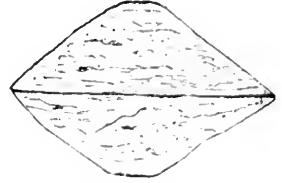


Fig. 34.

Fig. 34. Side view of Fig. 33. From near Phoenix, Arizona.

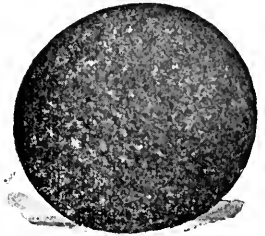


Fig. 35.

Fig. 35. Stone ball, Phoenix, Arizona.

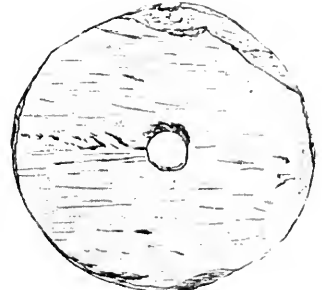
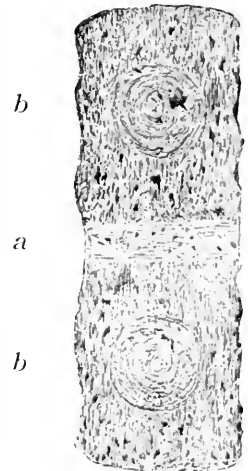


Fig. 36.

Fig. 36. Flat disc of pottery. Tempe, Arizona. S. 1-1. Very common. Supposed to be a rude spindle whorl.

Fig. 37. This peculiar stone is grooved in the middle, *a*, and has a depression near each end, *b*. Use, unknown. Mesa, Arizona. S. 1-3. Material, tufa.



None of the effigies, either animal or human, in degree of workmanship, equal the stone idols found in the southern states east of the Mississippi. The tribes of the Southwest made superior pottery and were able to work turquoise, but their stone implements, taken as a whole, fall far short of that standard of excellence exhibited in the artifacts of the East.

* The Stone Idols of New Mexico. A description of those belonging to the Historical Society. Santa Fe, 1896. Illustrates some 20 or 30 idols.

Little pottery wheels, discs, effigies, etc., are found in abundance. They may be toys for children, spindle whorls or what not—let others decide. At least, they played their part in the culture of the Southwest.

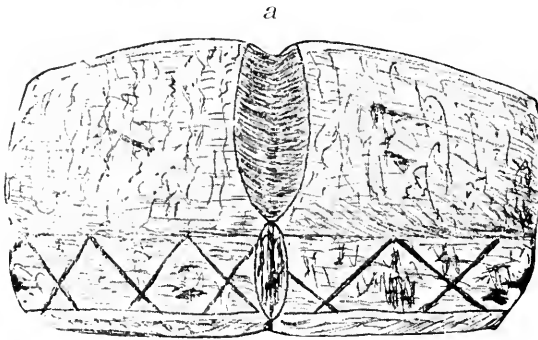


Fig. 38. Doubtless an arrow-shaft straightener. Grooved at *a*; a smaller groove at *b*. Found south of Phoenix. S. 1-1. Granite, and decorated by incised lines along the side, *c*.

c *b* GROOVED AXES.

They are common in the cliff-houses of the mountains and canons, also in the desert pueblos of Arizona and New Mexico. The average cliff-house axe is inferior to eastern forms. The desert pueblo axes are superior, as a whole, but individual axes are found in the Mississippi and St. Lawrence basins superior to any production of the Southwest's axe makers. I am sorry that limited space prevents a presentation of several Arizona axes, full size.

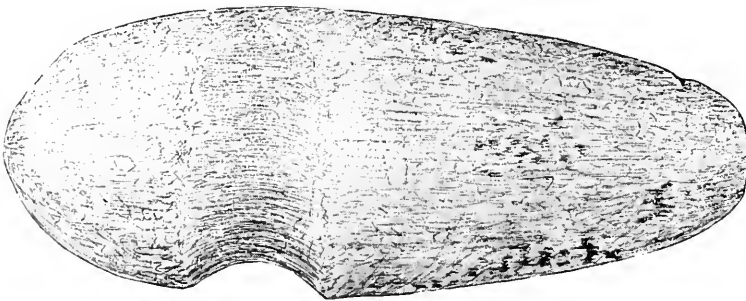


Fig. 39. Typical axe from ruined pueblo near Phoenix, Arizona. S. 1-2. Polished granite; dark green color.

Fig 39 is an axe having a flat back. The heads or polls of Arizona pueblo axes are usually rounded, pointed or squared. But the cliff-house axes not only of Arizona, but of this whole Southwest region are very inferior. Collectors must bear in mind the distinction.

Nordenskiöld found several axes mounted in their original handles.* The State Museum at Denver had on exhibition (in 1897) some mounted axes, also many throwing sticks, feather robes, knives and spears in handles, etc. All skin, wood, cloth, fibre, etc., possessions of the eastern tribes perished because of climatic conditions. The Southwest, being arid, presents for our study the very classes of material which we lack in other localities. In addition to dryness, the textile fabrics, wooden and feather objects had additional protection, being left in underground rooms, or within sheltering caves, or covered by desert sand. Thus, archaeologists are enabled to determine the method of hafting implements, weaving and all kindred arts, extent of agriculture, etc., etc.

* Cliff-dwellers of the Mesa Verde, Colorado. G. Nordenskiöld, Stockholm, 1893.

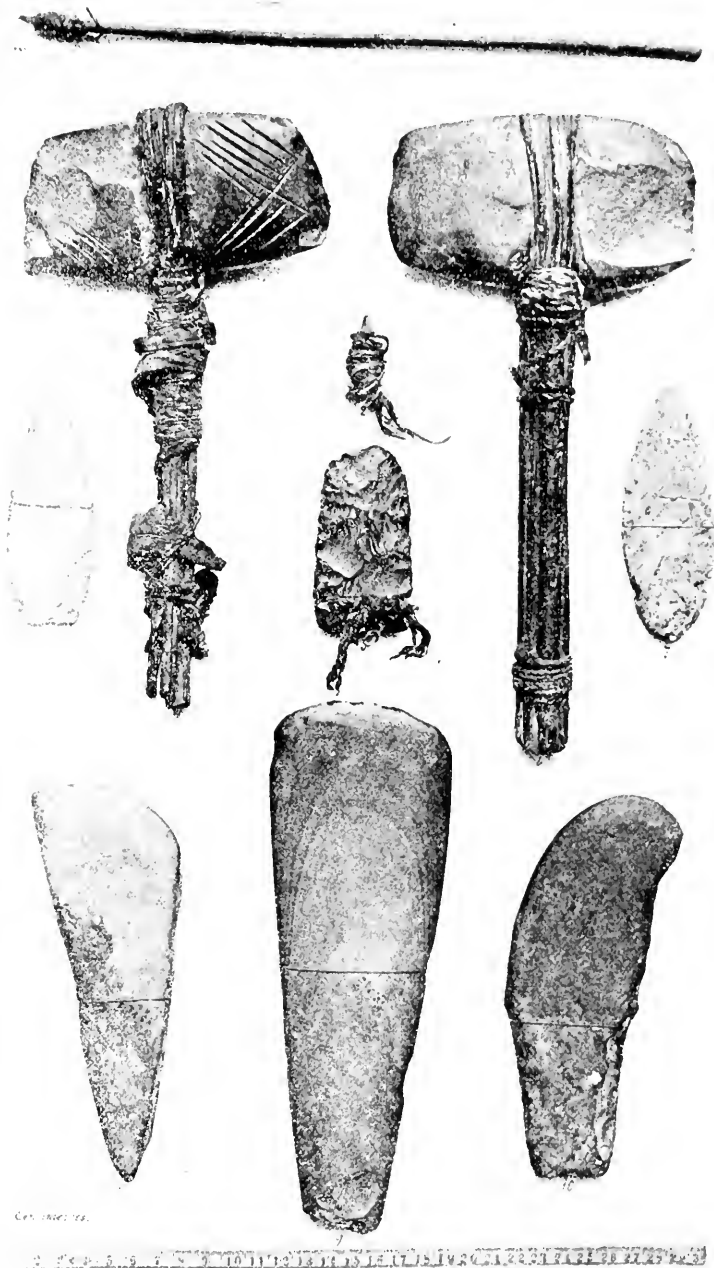


Fig. 40. Scale, about 1-3 (see rule).

From cliff-houses of Southwestern Colorado.

1. Small point (drill?) of flint attached by strips of yucca fibre to a stick.
2. Drill point of jasper, with the yucca strips for fastening it to the shaft still adhering to it.
3. Knife of quartzite.

4. Axe in handle. Decorated blade. Handle composed of twigs bent around the axe and bound with strips of yucca and hide.
5. Scraper of flint, with a cotton string bound around it.
6. Sandstone axe in handle.
7. Quartzite knife. Traces of pitch or asphalt remain. Knives were fastened to handles with such substances.
8. Skinning knife of hornstone. Perhaps a celt-like object (curved, polished stone hatchet).
9. A polished stone hatchet or celt. These are frequently found. They are thin and sharp. The eastern type of celt does not occur.
10. Skinning knife of hornstone. The handle was found still attached to the knife, but was entirely decayed. I have reproduced all of these from Baron G. Nordenskiöld's *Cliff-Dwellers of the Mesa Verde*, plate XXXVI.

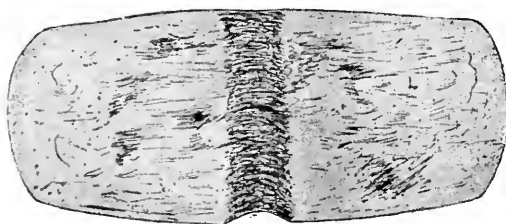


Fig. 41. From adobe ruin (pueblo) near Phoenix, Arizona. S. 1-2. Polished green granite. Very sharp.

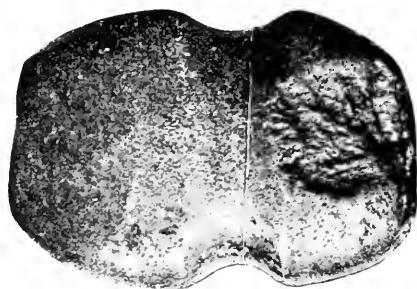
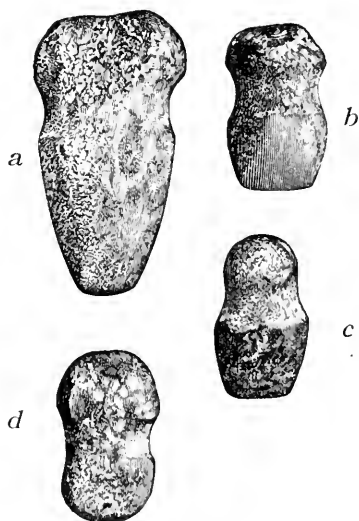


Fig. 42. Typical, grooved hammer. From a ruin in Southwestern Colorado. S. 2-3

Fig. 43. Group of stone axes from cliff-dweller buildings in Colorado (Nordenskiöld).

- a. Unusually long.
- b. Similar to specimens from Arizona.
- c. A rarer form, being narrow at the top (poll) and having a broad blade.
- d. Originally an axe but afterwards used as a hammer. The ends battered and cutting edge worn until the groove is about the middle.



Not a few double-bitted axes are found in the valleys or about desert ruins. They are not common in the boulder, stone or other ruins of the mountains. All of them are well made, light and probably intended as weapons.

For hand-to-hand fighting they would be very effective.

The rougher cliff-ruin axes and hammers are of all sizes and shapes. Doubtless, many were used to dress the sand-stone slabs, blocks or bricks of which the buildings were constructed. Battered and broken edges are in evidence and all of them look as if they had seen hard service.

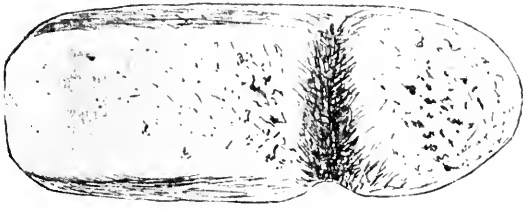


Fig. 44. Small axe of granite. Quite sharp. Surface find east of Phoenix, Arizona. S. 1-1.

Fig. 45. From near Phoenix, Arizona. S. 1-2. These double-grooved hammers are rare, and seem to be peculiar to the Southwest. Nothing like them is found outside of the Colorado-Rio Grande region.

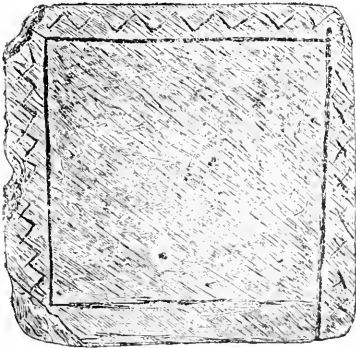
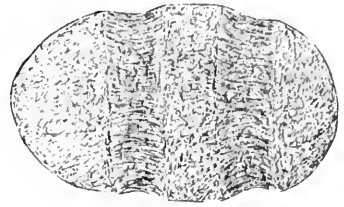


Fig. 46. Decorated object of black slate. Found south of Salt river, near Phoenix. It is slightly worn in the center. Several of these "slates" have been found. Possibly ceremonial paint was put on them. S. 1-2.

Arrow-points are not very common. Long slender ones like *c* are typical in the region. Serrated, such as *d*, are rare. In fact, the form is somewhat drill or "hair pin" like. I have seldom seen such slender, delicate, yet deep-barbed points. Mr. Tait has many superior to Fig. *c*. While *a*, *b*, *d* and *e* are not specially fine, *c* is seldom surpassed even on the Coast.

The materials are volcanic substances. Obsidian, agate, silicious wood, quartz and chaledony predominate. The central point between *b* and *e* is common; also the triangular one just above it.

ORNAMENTS OF SHELL.

Shells were transported from the Gulf of California and the Pacific in incredible numbers. About Phoenix and Mesa (also along the entire Salado Valley) the desert is white with them. I have counted a hundred fragments on the surface within a few yards. Professors Cushing and Fewkes found many in the ruins.*



Fig. 47. Sand-stone effigy—perhaps an armadillo. Several such have been found in the adobe ruins of the low-lands. From east of Phoenix. S. 1-2.

Bracelets were made from the *Pectunculus giganteus*, Reese. The smaller ones were wrought into frogs, finger-rings, etc. Beads were commonly made of the *Oliva biatula*, Gurelin and *Oliva biplicata*, Sow. Dr. Griffith found some fossil shells in the ruins. Other shells are numerous; I have space for no more.†

*Pacific Coast shells from Prehistoric Tusayan Pueblos. Dr. J. W. Fewkes, *American Anthropologist*, 1896, p. 359.

†Ethno-conchology. A study of Primitive Money. Robert E. C. Stearns, *Smithsonian Report*, 1887, p. 297, gives a very satisfactory account of the Southwest, the Coast and of all America.

The bracelets and finger-rings were reduced to shape by grinding—the shell being rubbed upon a rough surface until only the rim remained. Some are finely wrought, others hastily made.

Of the little rings, Dr. Fewkes says:

“These, as a rule, were not finely made, but were invariably perforated at the rimbo, possibly on account of the thinness of the shell at that point. They seem to have been worn on all fingers, and I have taken two for the same digit.”*

Effigies in shell are fairly common; of turquoise and onyx, rare. I present figures of a number.

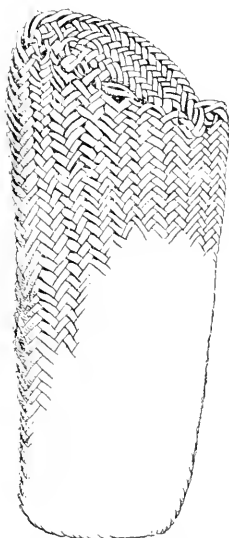


Fig. 48. S. 1-4.

These have been called sandal lasts. Many are found about cliff-ruins. What they are I do not know.

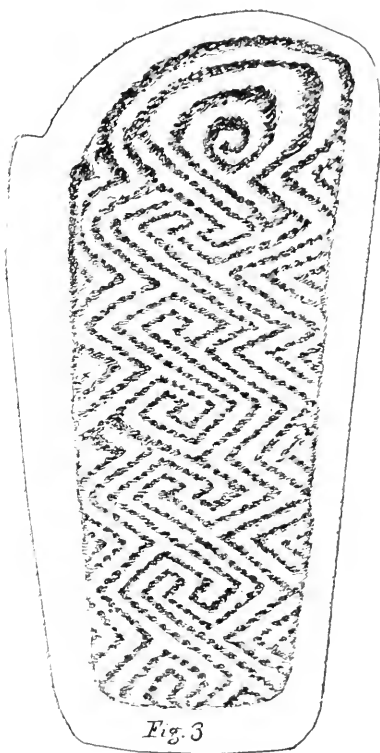


Fig. 49. S. 1-3.

Dr. J. F. Snyder's article in *American Archaeologist*, 1897, p. 128, presented two illustrations of these. I offer his figures here. He quotes Nordenskiöld, but adds: "how such a model could be required or utilized in weaving a simple flat mat (base of sandal) is not, at first glance, quite apparent." Dr. Snyder thinks that a long strand of yucca fibre was first wound about the stone at intervals of half an inch or more. Upon this base the plaiting was done. Mr. R. Wetherill, who has explored cliff and mesa ruins for many years, also describes the "lasts" in the September number of the *Archaeologist* (1897).

*Fewkes. *American Anthropologist*, 1896, p. 362.

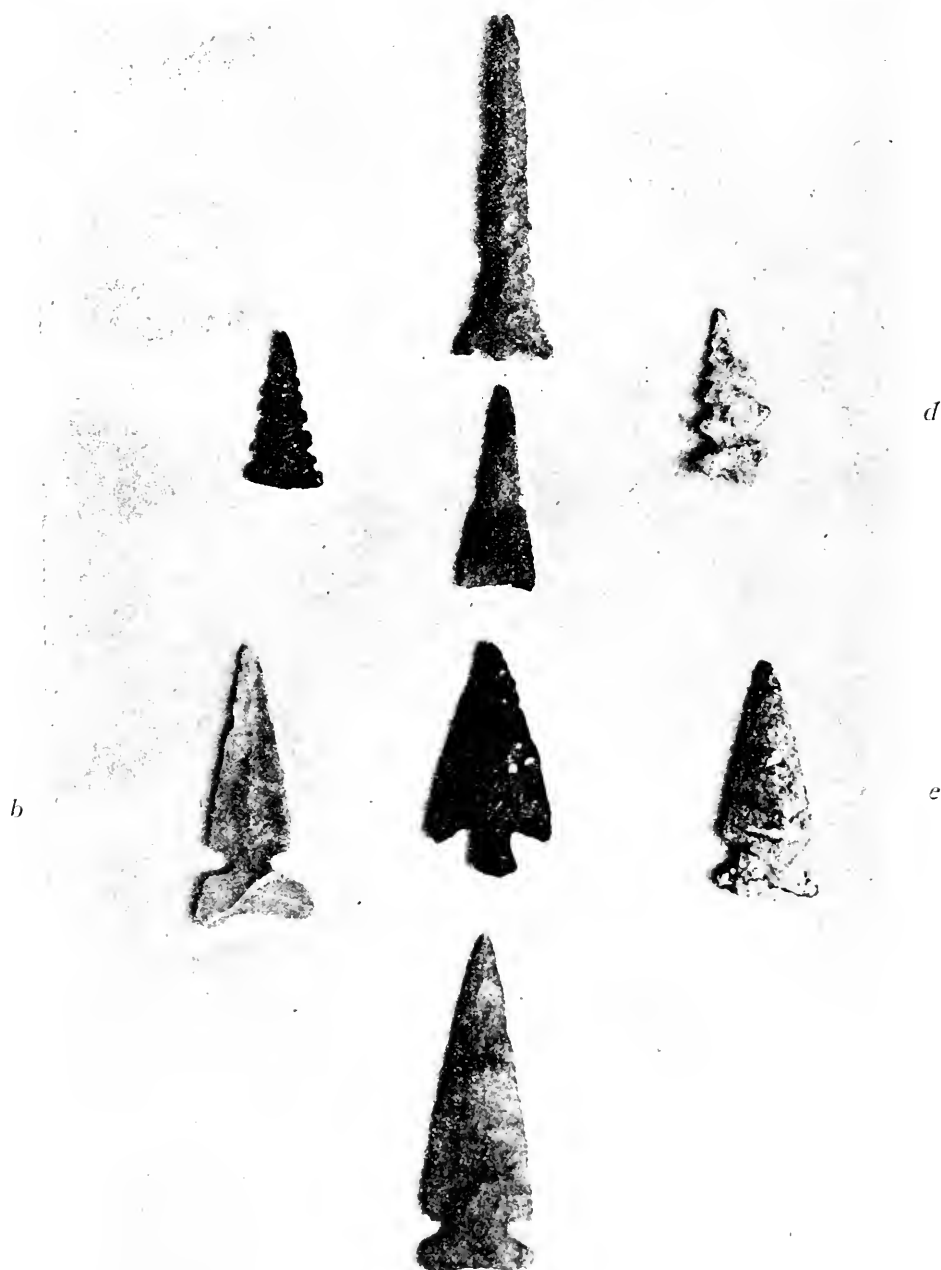
c*a*

Fig. 50. Eight arrow-points from southern Arizona. They are not equal to the Oregon and North Pacific coast forms. S. 1-1.



Fig. 51. Various shell trinkets from ruins near Phoenix. S. 1-1.

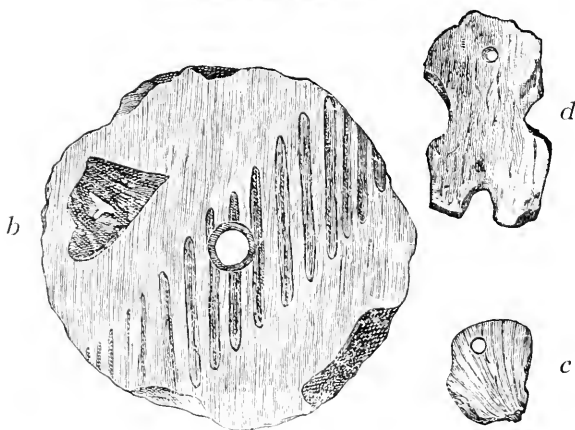
- a. Effigy (fish?).
- b. Fragment of shell bracelet.
- c. Small bead, very common.
- d. Large shell bead.
- e. Shell bead of another type.
- f. Large shell bead.
- g. Large shell pendant in the center of the illustration.



Fig. 52.

- a. Shell bracelet. Within it are shown two turquoise beads.
- b. Pottery disc, perforated.
- c. Shell ornament.
- d. Slate ornament.

All from desert ruins near Phoenix.
S. 1-1.



A NOTE ON PERFORATED STONES.—“I read, with great interest, a paper on *Perforated Stones from California*, by Henry W. Henshaw, published by the Smithsonian Institution under date of 1887, and received by me some two or three months ago.

“I have in my possession a number of war clubs from New Britain, which consist of a wooden handle armed at the head with perforated stones which have been ground down to a smooth surface.

“The handle is 4 ft. 3 in. long and projects at the head 3 in. beyond the stone. The stone weighs exactly 12¼ oz. Some of these stones in my possession are larger than the specimen drawn, while others are smaller; but one has only to handle a club, armed even with the lightest of them, to

be convinced that it is a formidable weapon. The smallest of the stones in my possession weigh 9 oz. 15 grains. 'It is to be particularly noticed.'

"Mr. Henshaw says: 'that many of the stones have grooves worn around the perforations, which grooves appear on the one side only, and that the polished side.' My specimens from New Britain also have this groove on one side only, and its use may be seen in the accompanying sketch. The stone is always fixed on the handle with the grooved side undermost, and this groove is filled up with a sort of collar composed of strongly adhesive gum in which is set, for ornament, I suppose, a cirelet of the small shell-tips which, threaded on a string, are the money currency of New Britain. This keeps the stone firmly in its place and prevents it from

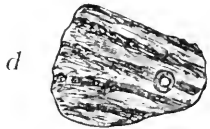


Fig. 53.

- a. Shell ornament.
- b. Bird effigy of shell.
- c. Finger ring of shell.
- d. Shell ornament.

Phoenix ruins. S. 1-1.

It should be observed that *a* and *b* are (by error) shown twice the size of the originals. The ring and shell pendant are full size.



slipping down. The groove, of course, is necessary for the reception of a sufficient quantity of gum and shell. It would, perhaps, be more correct to say that the groove is filled with gum and that the 'money' is then stuck on around the staff and pressed into the gum before it hardens.

"The lower end of the handle is sharpened and is used as a thrusting spear at close quarters.

"These clubs are still in active use cracking skulls in New Britain at the present day; and this fact proves that whatever other use perforated stones may be put to, they are certainly used as war clubs. The evidence is conclusive that they are used by the Hottentots as weights for digging sticks, but I have not met with any proof that they *manufacture them for that*

purpose. I have seen a statement, though where I cannot remember, that these stones are frequently found exposed after the soil has been washed away by heavy rains, and it is quite possible that Burchell's Hottentot, quoted by Mr. Henshaw on p. 12, may have been utilized for his *graafstok*, the club-head of some long-forgotten warrior of another race.

"It is quite likely that the stones in some places may be perforated especially for digging sticks, but it does not seem likely that the same stone would be used for that purpose and for a war club as well, as suggested by the Rev. Langham Dale, quoted by Mr. Henshaw on p. 13. The savage needs to have his war club always ready, and the stone must be a fixture in a position which unfits it for digging purposes.

"The digging stick is used throughout the South Sea Islands and in Australia, but I have never met with it weighted by a perforated stone. Among the Australian blacks it is a woman's implement. The women use it for digging wild yams and edible roots. They also employ it very effectually as a weapon when their husbands are hard pressed in a fight and they come to the rescue. They rush in, shrilly screaming, and make excellent play with their yam sticks on the heads of the foe.*

LORIMER FISON, M. A."

The American Anthropologist. Vol. II. No. 2. April, 1889. Pages 177-8.

*This applies equally well to the Arizona-New Mexico "wheels," perforated stones, etc.

SECTION II.

THE UPPER MISSOURI; THE UPPER MISSISSIPPI.

There is little to be said regarding these regions. Not many stone, flint or clay objects are found. A number of shell and bone beads or ornaments occur. Such types as are duplicated on the Pacific coast will be described in the section treating of that region.

The Upper Missouri, as a whole, is high in altitude and ranges from 3,000 to 11,000 feet above sea level. Not enough implements have been found to justify archaeologists in paying special attention to it. I doubt not that a careful examination of the territory would reveal a number of new types, but the information at hand is scant. Concerning the Upper Mississippi more may be said. It must be borne in mind that Minnesota was settled at an earlier date than Montana, Wyoming, or North and South Dakota. Consequently, much more is known regarding prehistoric man of the Upper Mississippi than of ancient man of the Upper Missouri.

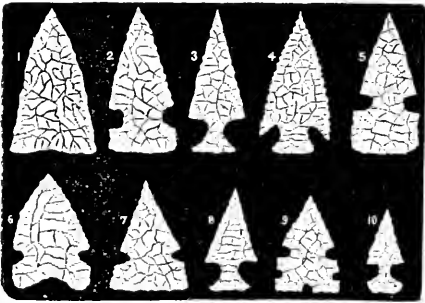


Fig 54. Delicate arrow-points. Headwaters of Missouri River. S. 1-1. The various forms are presented.

The Centennial Valley is within a few miles of the water-head separating the Pacific from the Missouri. On the headwaters of the Pacific streams are found small points like those of Oregon and Washington. I present several in Fig. 54.

In Fig. 55 are six obsidian implements from the Centennial Valley, Upper Missouri, Montana.

Fig. 56 illustrates nineteen flint and obsidian implements from the Centennial Valley and vicinity. From the headwaters of the river on down through the Dakotas for nearly 1,500 miles quite a number of stone, clay and bone objects have been found. But descriptions of these are brief and mostly fragmentary, being scattered through various reports and journals. I can do no more than call attention to some of the prevailing types. I



Fig. 55. Obsidian implements, Montana. S.1-1. I am indebted to the Hon. J. V. Brower for Figs. 55 to 62.

have thought that a properly appointed survey should embark in a steam launch at the mouth of the Yellowstone river, in Montana, and follow the Missouri down to Kansas City. This trip could be accomplished in four or five months. Government charts of the region traversed could be procured, and all the prehistoric sites marked. Although various expeditions have passed up and down the Missouri in the last fifty years, there has been no systematic record of the villages either ancient or modern. The character of the artifacts found on camp sites of the river, or upon its tributaries, have not been described. Readers will understand that in attempting to describe the specimens of the Upper Missouri, I am laboring at a great disadvantage, and I must therefore be pardoned for presenting the facts obtainable in the form of a synopsis.

These were reproduced from the following books by Mr. Brower: *Missouri River and its Utmost Source*. St. Paul, 1897. *Pre-historic Man at the Head-Waters of the Mississippi*. St. Paul, 1895.

Mr. Brower is well known as an historian, geographer and archaeologist and his explorations have been very extensive and quite successful.

The tribes living on either side of the Missouri, and using it as a highway for communication with other peoples either above or below, were, primarily, plains or hunting tribes. In the later times these were designated as Horse Indians to distinguish them from other savages living in the mountains or woods.

In this region arrow-points or small spear-heads and knives are common. Grooved axes are rare. Celts or polished stone hatchets are fairly common. Hematite is rare. Copper objects are very seldom found far up the Missouri. But it occurs in the Dakotas and is very common from Minnesota eastwards throughout the lake region. The pottery is plain and of an inferior grade. But few specimens are decorated, and many of the fragments exhibit basket mouldings or other marks upon the exterior, showing that the vessels were fashioned within moulds of rush, or reed, or cane, or hide. Pipes are largely made from catlinite. But few foreign substances are found, indicating that barter, trade or commerce was not extensive. Stone-mauls or hammers are common. These may have been used in hunting buffalo or antelope in the snow, or for breaking large bones, pounding, etc. The arrow-points are quite small and do not present that diversity of form and material found in the South or towards the East. The types of arrow-points, knives and spear-heads illustrated in Fig. 56, from Montana, are quite different from those occurring on the river farther down. But none of them, whether from the Upper Missouri or from the Lower Missouri, are to be compared with similar artifacts from the Pacific Coast, the East or the South.

The bone awls are like those from the village sites or tumuli of other sections of the United States. Bone scrapers, made from tibiae of the deer, antelope, elk or buffalo, are more frequent than elsewhere. Many round balls of stone are found. These may have been slung shots, or mounted as heads to war clubs. Types of more modern make, iron arrow-

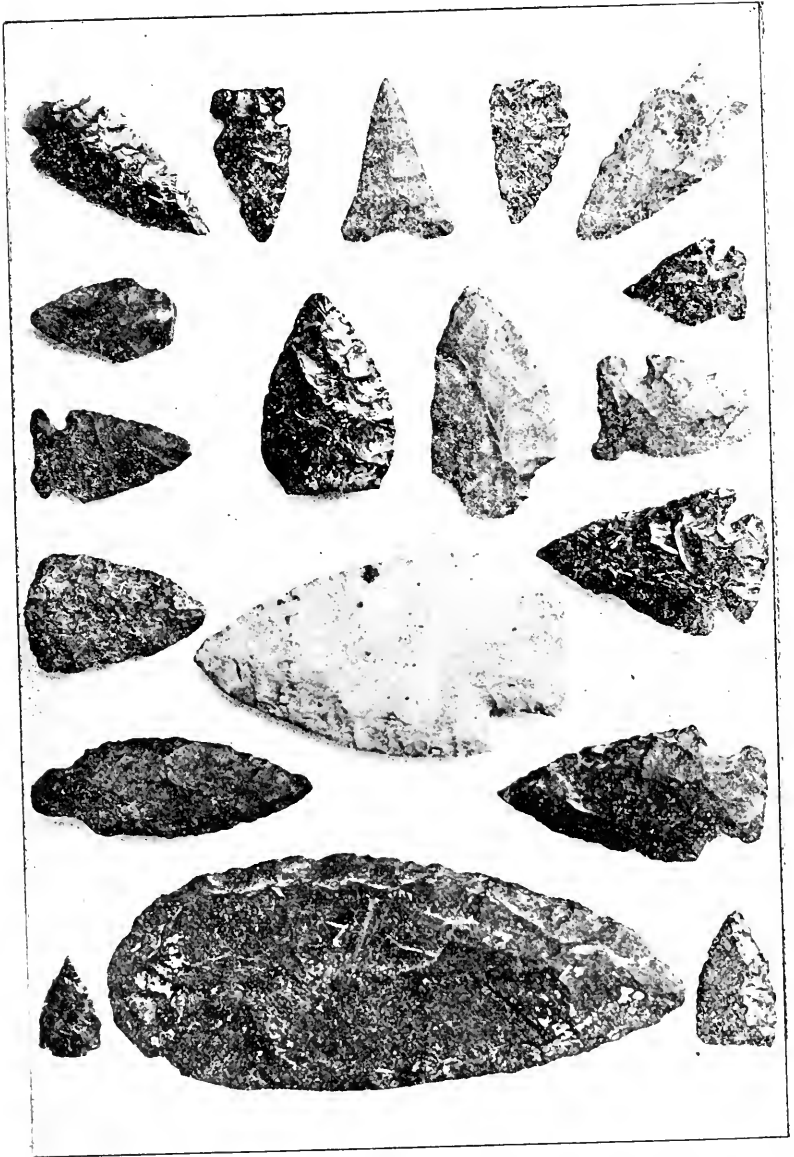


Fig. 56 Obsidian and flint implements, Upper Missouri (Centennial Valley.) S. 1-2.

points, brass beads, and scalping knives are common, but as this book treats of the prehistoric only, I shall not attempt to describe them.

Brief articles on archaeology of the Missouri River and tributaries have been published in *The American Antiquarian*, *The American Anthropologist*, *Smithsonian Reports*, etc. Most of the papers treat of mound explorations and say but little about implements, ornaments or utensils. Mr. T. H. Lewis seems to have done as much work through the Dakotas, eastern Nebraska and northern Iowa as anyone else.

Of the Upper Mississippi more can be said. The relics of this region are somewhat like those of the lakes, although there are some differences which will be treated of when we discuss the types found from Duluth to Montreal and throughout the St. Lawrence basin. In Fig. 57 I present fragments of pottery from Itasca Lake and other localities. Excepting a few of the decorations, this pottery is very like that found on the Upper Missouri. In Fig. 58 three specimens are presented. No. 1 is a typical pipe of catlinite, although of ancient form. No. 2 is a round disc of unknown use. No. 3 is a hammer stone of peculiar type. Fig. 59 are two grooved stone hammers, A, from Leech Lake, and B, from Lake Itasca. Both are shown full size. They are such forms as are common throughout the Missouri Valley north of Kansas City. Fig. 60 presents: No. 1, a copper wire, probably a hair pin or ear ornament; No. 2, a scraper; No. 3, a flint knife; No. 4, a small scraper; No. 5, a large obsidian spear; and No. 7, a very fine obsidian spear. All these are shown full size. Fig. 61 presents seven copper implements, all shown full size.

Fig. 62 is a large, flint spear-head of unusual type. Specimens of this form are usually pointed at each end and are supposed to have been used as knives. This specimen is of that general type, only that it appears that one end has been cut off, leaving a base about two-thirds of an inch in diameter. The artisan who was able to produce so fine a specimen of aboriginal workmanship as this was certainly an adept in his profession. These are found throughout the St. Lawrence basin and the lakes region, but are very rare farther south.

The great obsidian ledges or cliffs of the Yellowstone Valley have furnished material for countless cutting tools and projectiles. All over the hills and plains, within a day's journey of the cliffs, are scattered fractured blocks, spalls, broken and finished implements.

Throughout the two Dakotas prehistoric villages seem to have been located near the Missouri or upon its tributaries. Stone mounds and boulder effigies are common. Earth mounds and fortifications are rare.

A peculiar specimen of the "scraper form" is common in the Rocky mountains. I will quote Dr. Wilson's remarks:

"Lest some critic should pick a flaw in the foregoing statement of facts, I mention the teshoa, a kind of scraper peculiar to the foot-hills on the eastern slopes of the Rocky Mountains. It was described by Professor Leidy, and specimens have been sent to the Museum by Col. P. H. Ray. They were simply spauls from boulders with a sharp edge and were knocked

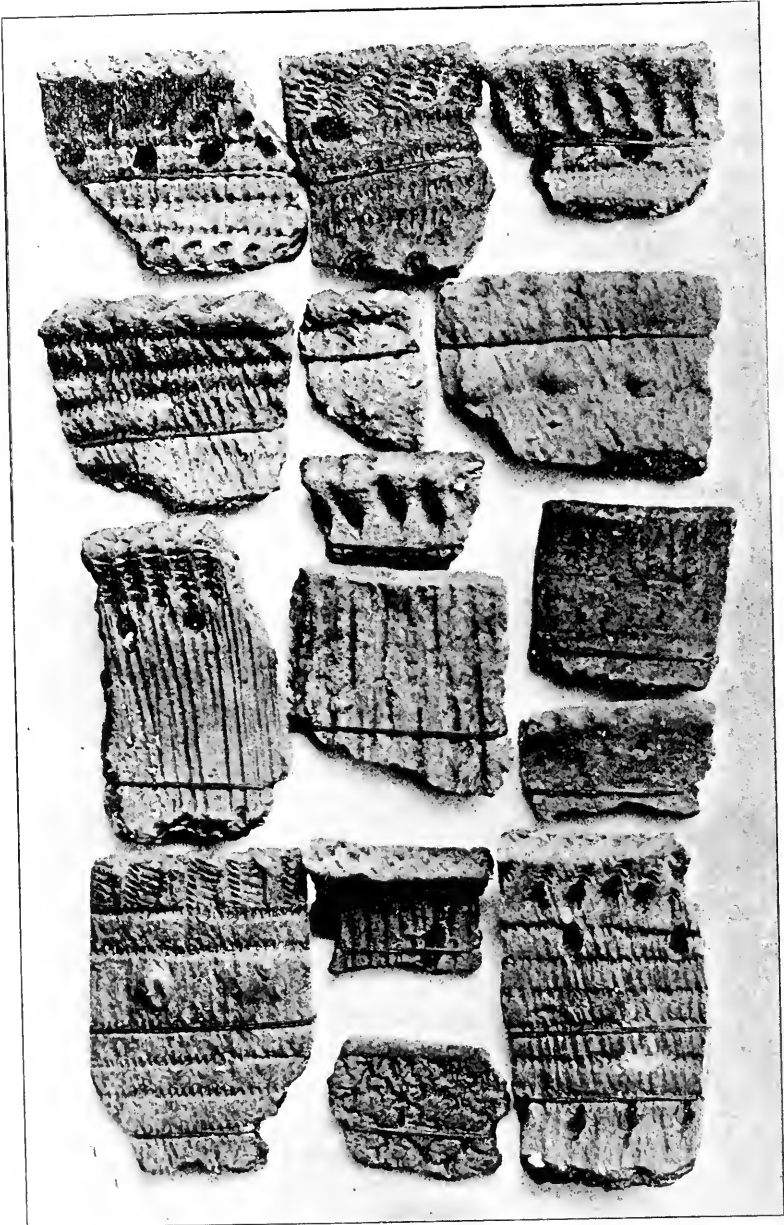


Fig. 57. Pottery fragments from the Upper Mississippi, near Lake Itasca. S. 1-2.

off by the Indians during their buffalo hunts, used temporarily, and left. This is believed to be the only exception to the universality of the form of the stone scraper in the Neolithic age throughout the world."*

It is also found in the Southwest.

The prevailing types and scarcity of specimens can best be illustrated by quoting from some of the reports on field work, etc.

Mound exploration in Pipestone County, Minnesota.

Concerning one tumulus, the account says: "Beneath the latter was a pile of broken stones, mostly of smaller sizes, among which were pieces of pipestone, badly decayed fragments of human and coyote bones, but no entire skeleton. In this were found charcoal and ashes, the only instance of their presence in any of the mounds at this place. They were underneath the pile of stones. A small drill was found with them."†

Dr. Thomas' observations on the pottery are briefly stated:

"The ornamentation of the pottery is, as a rule, similar to that of the Mandans, except that it appears to be a trifle ruder. The characteristic incised lines of the Mandan pottery are constantly met with. The tempering material employed is also the same, it being a fine silicious sand."‡

The only find of importance made in the region—and it includes most of the objects found there—is described by Dr. Thomas as follows:

"Souris river mounds.

"A catlinite pipe of the tubular variety, curving toward the base, and many pieces of broken pottery were found with them. These pottery fragments are ornamented with straight incisions, and are composed of a mixture of clay tempered with fine sand or pulverized granite. Five catlinite pipes of the tubular variety, a polished sandstone tablet engraved on one side with the rude figure of a turtle, and two small clay cups, about the size of an ordinary finger bowl, accompanied the skeletons. The pottery has an incised spiral ornamentation extending all around the bowl and a corrugated rim. The composition is a mixture of clay with fine sand or pulverized granite. Quite a fresh piece of bark, apparently bearing the marks of a knife along one edge, was also found accompanying these remains.

"Also three fine specimens of arrow-heads of a light grayish flint and a portion of some polished implement of bone, ornamented with straight incised lines which appear to have been produced with a sharp steel knife."||

The peculiar tubular pipes made of catlinite, described by Dr. Thomas, were found in Iowa, Kansas, and occasionally elsewhere. The other objects are typical of the region.

I have reserved the lower Missouri, or the country better known as "The Great Plains", for a longer and more comprehensive section.

*Proceedings of the American Association for the Advancement of Science. Forty-eighth meeting, held at Columbus, O., August, 1899. Section H. Anthropology. Address by Dr. Thomas Wilson, p. 348.

†Dr. Cyrus Thomas. Annual Report of the Bureau of Ethnology, '90-'91, p. 43.

‡Ibid, p. 41.

||Ibid, p. 37.

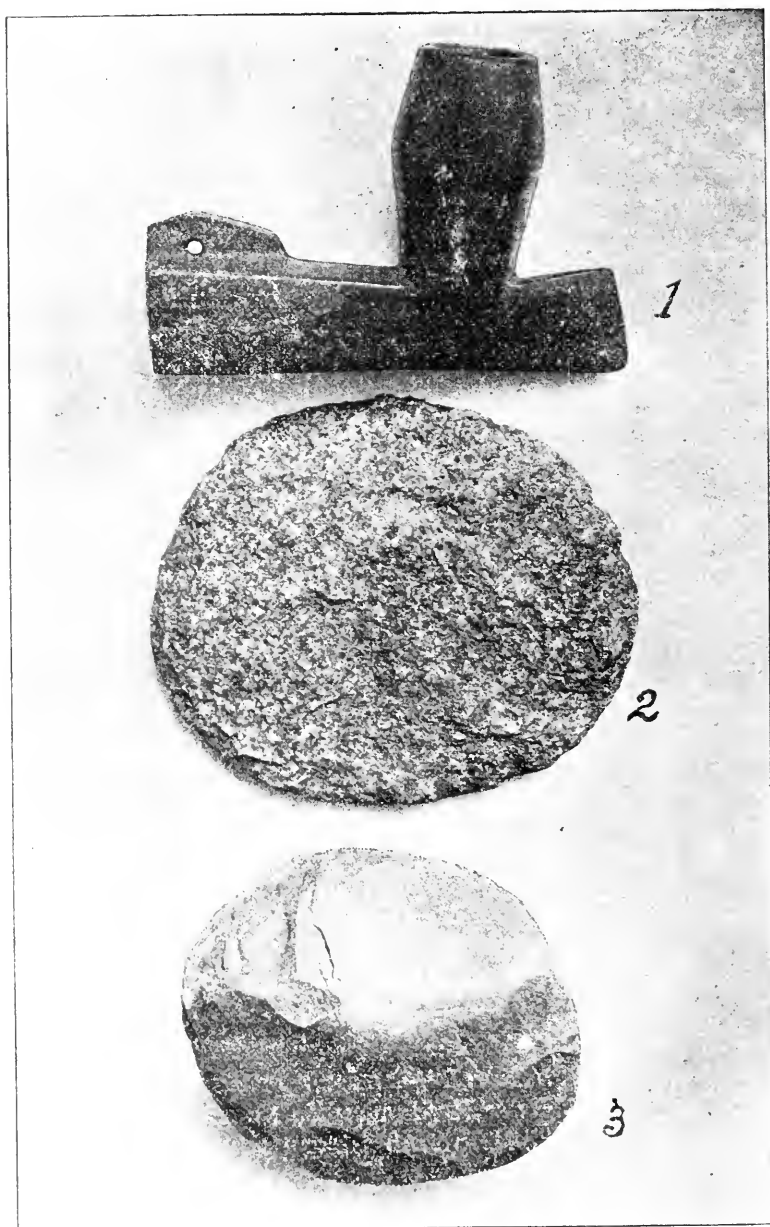


Fig. 58. Upper Mississippi Valley. S. 1-1.

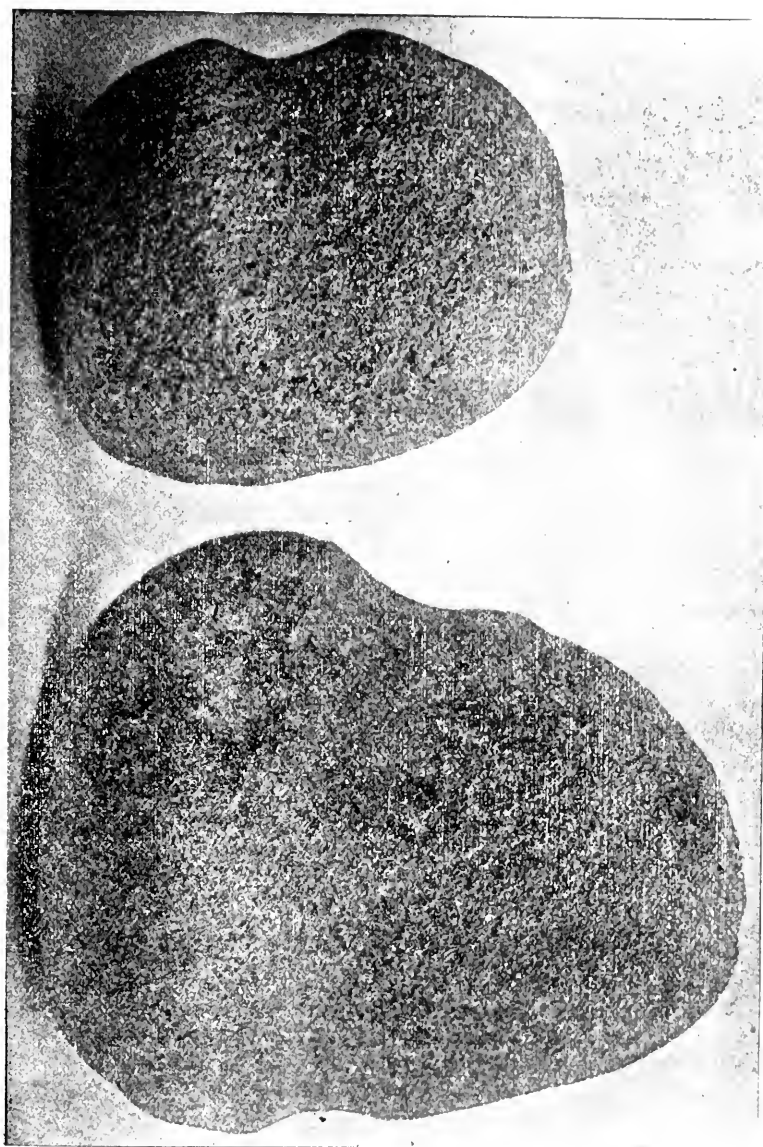


Fig. 59. Two grooved stone hammers from the Upper Mississippi. S. 1-1.

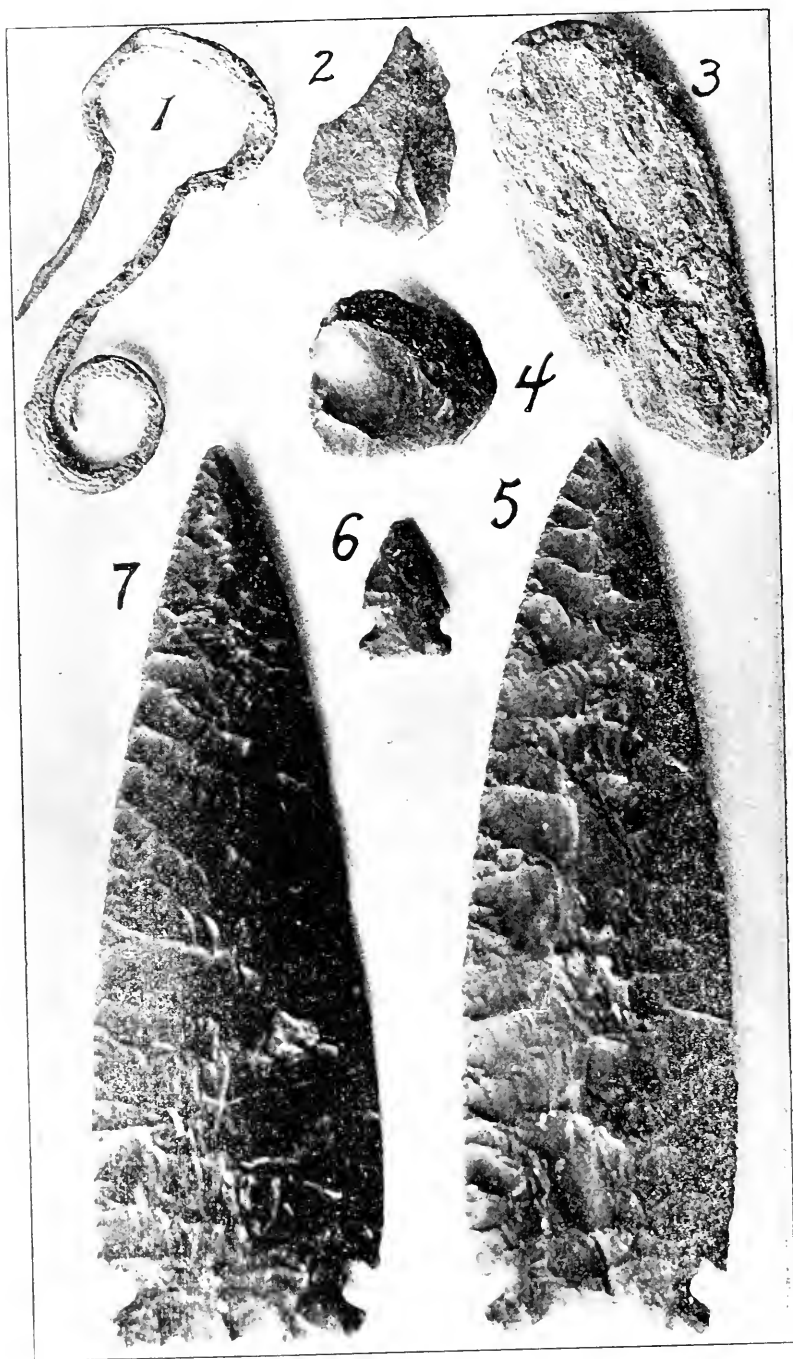


Fig. 60 Obsidian, flint and copper objects from the Upper Mississippi. S. 1-1. (Brower.)



Fig. 61. Copper objects from Minnešota. S. 1-1. From Mr. J. V. Brower's "Headwaters of the Mississippi River." In the center is a long spear-head. At the bottom are two small bracelets. Above them, two arrow or spear-heads of different type. The one to the right having a long, pointed base to be inserted in a socket or perforation in the handle. The other could be more securely fastened to a handle because of the overlapping edges. Above the long (central) spear is a pointed implement, and in the corner a crescent (head ornament).

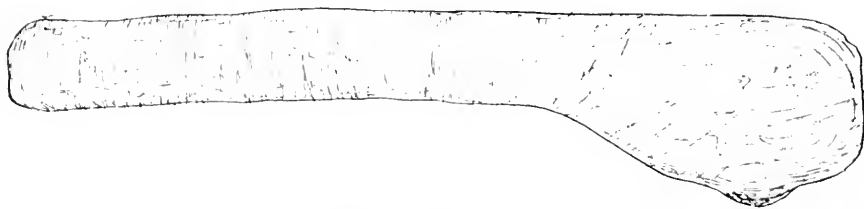


Fig. 62. Stone war club from northern Colorado. S. 1-5. These are occasionally found in the Rocky mountains, but I am not aware that they occur elsewhere in the United States. Possibly, some have been found on the Pacific coast. The original of this is in the collection of Mr. R. S. P., and weighs about 12 or 13 pounds.



Fig. 63. A peculiar flint spear or lance-head. It may have been double-pointed and one end chipped down so that the base was about an inch in width. At any rate the specimen is a very fine one. Found in northern Minnesota. From the collection of Dr. P. D. Winship, Park Rapids, Minnesota. S. 1-1.



Fig. 64. S. 1-1. Mr. Brower had made for me Figs. 64 to 68. He says of Fig. 64: "It is a double scraper of unique form; found by me at the source of the Missouri river on a village site at the crest of the Rocky Mountains."

I would call it a knife. Material, light mottled brown flint with red spots. The village was 10,000 feet above sea level.

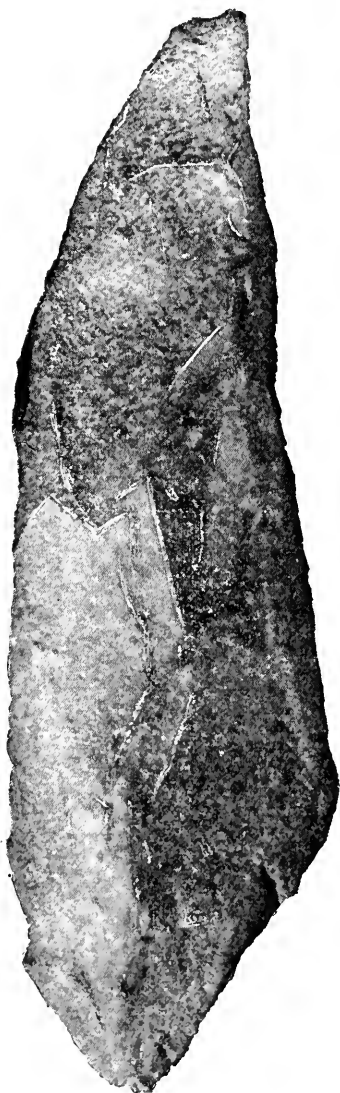


Fig. 65. A peculiar knife. Found associated with pot sherds on the headwaters of the Mississippi. Quartzite. S. 1-1.

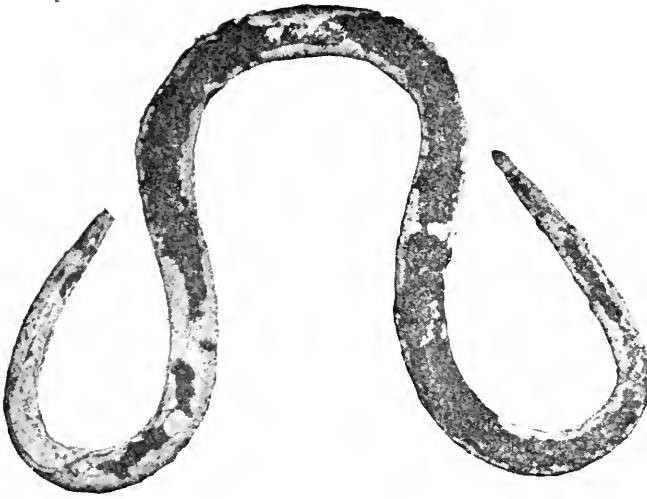


Fig. 66. Copper ornament (?), Sandy Lake, Minn., (near source of river), $\frac{1}{4}$ inch thick. S. 1-1.



Fig. 67. Peculiar copper object. The lower edge was formerly much sharper. Mr. Brower calls it a "spud" or "adz." I do not know its use. Some persons suggest that it was a bark peeler, etc. It shows marks of rough service. Upper Miss. river. S. 1-1.



Fig. 68. Pestle. S. 1-2. Dr. P. D. Winship, Park Rapids, Minn.

Fig. 69. Grooved hammer. S. 1-2. Dr. P. D. Winship, Park Rapids, Minn.

The pestle might readily pass for an Ohio Valley specimen. The grooved hammer is, however, different from most southern or eastern forms. It is typical of the Great Plains, Upper Missouri and Mississippi, and of the Lakes.

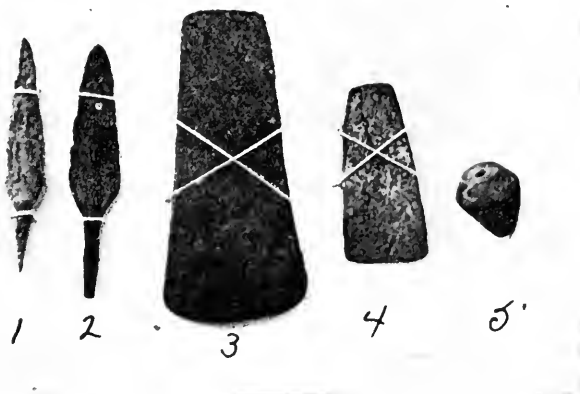


Fig. 70. S. 1-4. Collection of Mr. J. W. Peck, Stewartville, Minn.

- No. 1. Copper spear.
- " 2. " "
- " 3. " axe.
- " 4. " "
- " 5. Stone pipe. (?)

SECTION III.

THE GREAT PLAINS AND LOWER MISSOURI RIVER REGIONS.

This is a very rich region. It was so in ancient times—it is rich to-day. The wealth then lay in herds of bison and antelope; in countless acres of wild prairie land where man might roam unfettered. To-day, the productive plains and river valleys are turned to good account by a progressive race; but the vast herds are gone.

As the Indians killed buffalo they would have lasted always, for they slaughtered only sufficient game for their needs. But the hide-hunters and

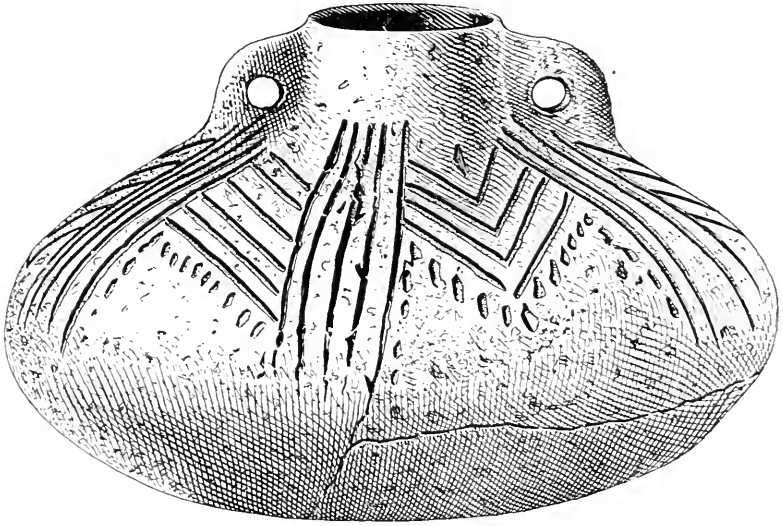


Fig. 71 Earthenware jar or bowl perforated for suspension. From the Hill village site near Manhattan, Kan. This and other figures from "Quivira," by Hon. J. V. Brower, St. Paul, 1898. S. 1-2.

the Bills and Dicks of frontier fame had no desire to make other than a "record killing"—hence the buffalo soon disappeared.

The northern and southern herds in the sixties and early seventies numbered from 5,000,000 to 10,000,000. Yet of this immense number a mere remnant of 300 or 400 remains to-day. To the Indian the bison meant food, shelter, clothing, fuel, etc.* His bones and sinews furnished implements, cords and ropes. Sometimes his hide was made to serve as a boat. In short, the buffalo was the *life* of the Plains tribes. His destruction, therefore, brought about much hardship, wars, etc. I mention these facts

*Col. R. I. Dodge, "Our Wild Indians."

so that students may appreciate the importance of buffalo to Plains residents; also, because the art of the time was influenced to an appreciable degree by the dependence of men for their very existence on this animal. The bison entered into their folk-lore, religion, etc.*

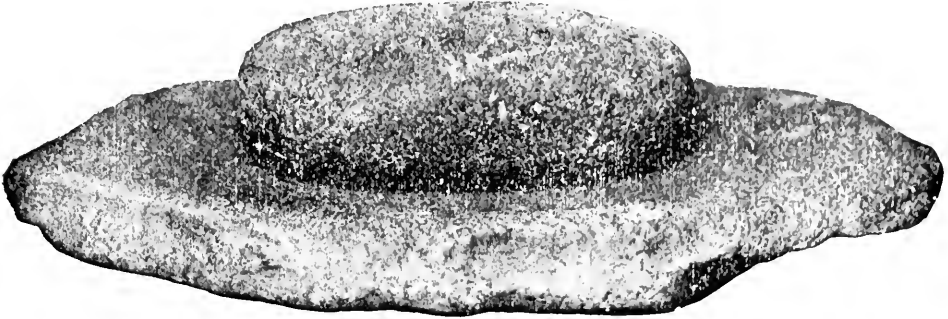
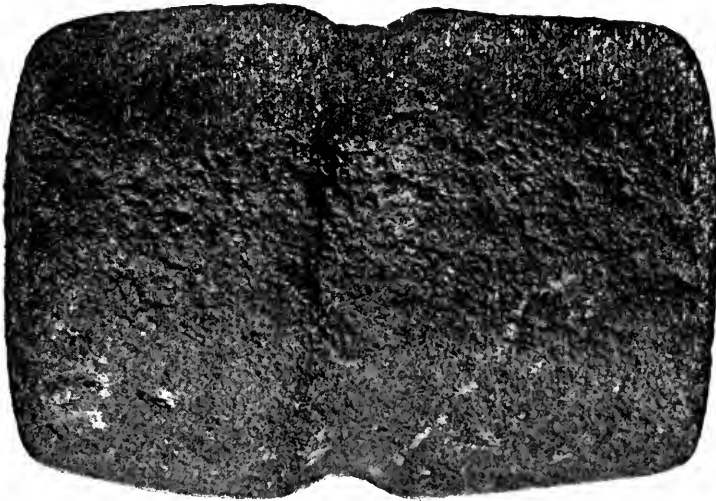


Fig. 72. S. 3-7.

Fig. 72 presents a Kansas metate from the village site on Wildeat Creek, Riley Co. Length $11\frac{1}{2}$ inches, width 7 inches. On it lies the mano-stone, which was rubbed back and forth to grind grain, seeds, etc. While the principle is the same, the forms are somewhat different from those of the Southwest, the latter being better made.



*Fig. 73. S. 1-3.

Setting aside, for the present, the numerous references to the archaeology of the Great Plains let us confine ourselves to the consideration of central Kansas. Along the Kansas river, from the mouth of the Vermillion to Manhattan, and farther up past Fort Riley and Junction City to Salina, there are numerous small mounds, village sites, etc. To the south of Salina, some

*Dorsey. (J. O.), Hornady, Mason, Riggs, Fletcher and many others in Smithsonian Reports, Anthropologist, American Antiquarian, etc.

50 miles, is the Arkansas river. The tributaries of both the Kansas and Arkansas have their rise in a common water-shed extending for some 150 miles east and west. While the region has been referred to in various reports, no detailed or systematic explorations had been conducted until the Hon. J. B. Brower took the field. This gentleman has recently become interested in archaeology, and his individual efforts—conducted regardless of expense—might profitably be followed by certain of our museums and investigators. Mr. Brower has published two beautiful Bulletins entitled, respectively, *Harahey* and *Quivira*. He has kindly permitted me to reproduce a great many of his illustrations and the greater part of my figures presenting Kansas types are from his two reports.*

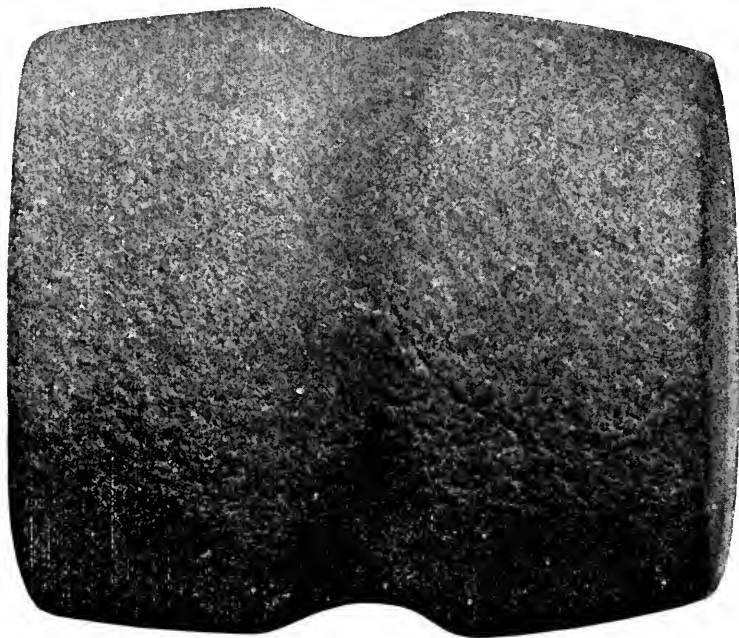


Fig. 74. S. 1-1.

In Figs. 73 and 74 I present two grooved hammers of Sioux quartzite. The first was found in McPherson Co., and the second in Rice Co. Mr. Brower says: "the effects of weather are vastly different, which may indicate a considerable difference in age."

The careful study of a particular area gives an insight into the details of daily life of the aborigines inhabiting that region. This proposition has been demonstrated by every field worker. Taking Manhattan as a center and drawing a circle 50 miles in diameter, an archaeologist will find a local culture somewhat higher than the average Plains tribe attained elsewhere. Primarily, they depended upon the buffalo. But they also were agriculturists, although on a small scale.

**Quivira*, by Hon. J. B. Brower, St. Paul, 1898. *Harahey*, by the same author, St. Paul, 1899. Both under the general title: "Memoirs of Explorations in the Basin of the Mississippi."

Fig. 82.



Fig. 81.

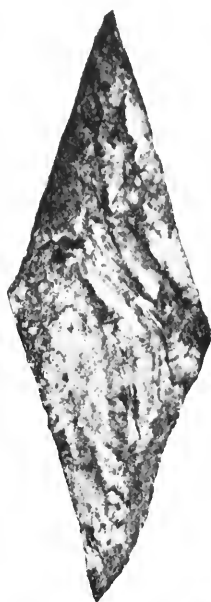


Fig. 80.

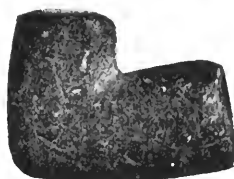


Fig. 79.



Fig. 78.



Fig. 77.



Fig. 76.

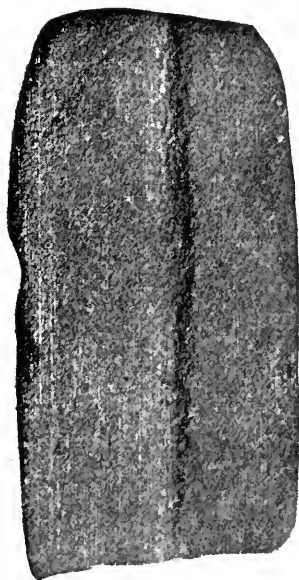


Fig. 75.

All, S. 1-1.

Fig. 75 is a peculiar sandstone block having a deep groove in it. These are common all over the United States and were undoubtedly tool sharpeners.

Fig. 76 is a catlinite pipe of such form as are frequently found in the South made of steatite, and in the North and East of sandstone, granite, shale, etc.

Fig. 77 is a long catlinite pipe peculiar of the Plains region, having three rings carved in relief a short distance from the stem hole.

Fig. 78 is a short catlinite pipe, the common form of Plains pipes.

Fig. 79 is an L shaped catlinite pipe of the same form which occurs in other materials in the East and South.

Fig. 80 is an eagle effigy of catlinite. Doubtless worn as an ornament in the nose or ears.

Fig. 81 is a double pointed knife with bevelled edges, and Fig. 82 is a slender spear or lance-head of Sioux quartzite.



Fig. 83. S. 1-1. Ornamental stones in this region are very rare. This is one of the few found. In this respect the region presents a marked contrast to the South and East. Ornaments are more common near the Mississippi or in Eastern Iowa, Minnesota and Missouri. They are extremely rare to the west of those localities. It was found on a sandbar in the Kansas river and is made of Sioux quartzite.

Mr. Brower thinks that the Spaniards penetrated this region and discovered two provinces, Quivira and Harahey. The latter lies east of the Big Blue river and extends north and south across the Kansas. The former is a more extensive territory and reaches from the Great Bend of the Arkansas to opposite Manhattan on the Kansas. Professor F. W. Hodge, of the Bureau of Ethnology, and Mr. James Mooney, of the same institution, concur with Mr. Brower in his contentions. I might add that Judge John G. Keagy has furnished Mr. Brower with much valuable information, and is also to be thanked.

IMPLEMENTS OF STONE AND FLINT.

The arrow-points of these peoples are very like those of the entire Plains region. But they possessed flint hatchets, large knives and spears, spades or agricultural implements somewhat inferior to those of the Mississippi Valley proper, etc. Their arrow-points are somewhat larger than those of the far West. Mortars or metates are a little ruder than those of the Southwest; but their pottery is not to be compared with that of Missouri, Arkansas, or Tennessee; their stone hammers are typical of the Plains



Fig. 84. S. 1-1. This figure presents an axe of Sioux quartzite from the Baldwin Village site, Antelope Creek, Wabamsee Co., Kansas.

Sioux quartzite was used very largely for making hammers, spears, arrows, etc. Geologist Warren Upham course in Mr. Brower's suggestions as to the transportation of material, etc.

Grooved axes are very rare, there being no trees to cut down, or canoes to make, etc., and few seem to have been in use. I have never seen or heard of an axe of just this shape.



Fig. 85 is one of the finest grooved axes which I have seen from any section of the country. It would do credit to the famous "axe region" of Southern Illinois, Ohio and Indiana. It was found in Pottawatomie Co., Kansas. Material, diorite. S., about 8-9.

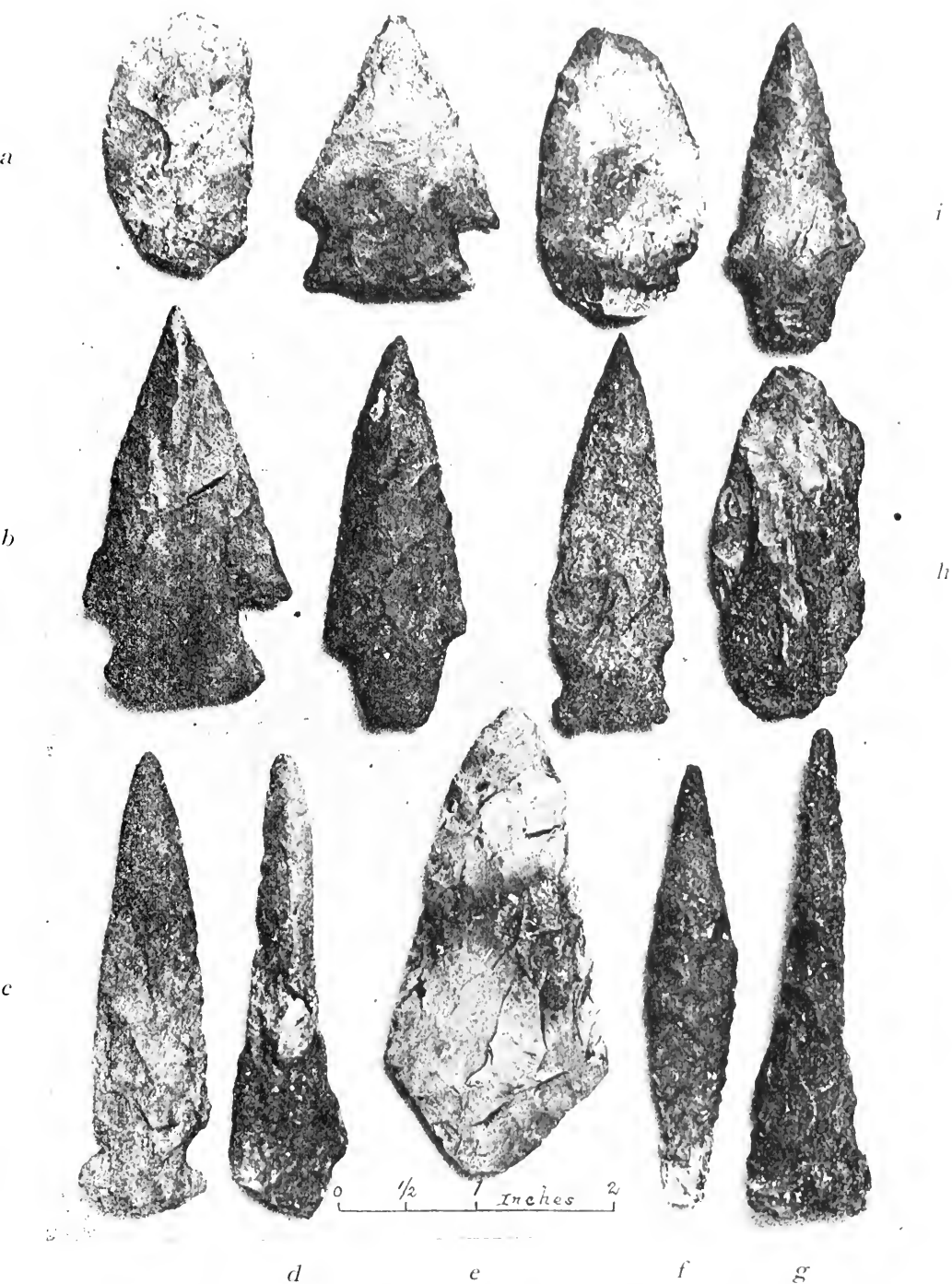


Fig. 87. Scale shown. Various flint specimens from the Elliot Village site, south of the Kansas river, about 10 miles from Manhattan. The specimens presented in this figure are

typical of this section of the Plains. Yet, some of the forms occur elsewhere. At *a* is shown a flint knife; at *b* are two spear-heads, the first broad and the second narrow; at *c* there is a slender barbed spear-head which almost appears to be a drill or perforator; *d* is a drill; *e* is one of the peculiar, lozenge shaped implements so common east and south; *f* is a more rare form—I take it to be a drill although it approaches the “double-pointed” type; *g* is a common drill; *h* is a rough knife, and at *i* is shown a shouldered arrow-point of a somewhat unusual form, having a very long head or shoulder. Next to *i* is a common knife.



Fig 86. S. 1-1. A chalk pipe (quite soft material) from the Hill Village site. It is of peculiar form and but few of this shape have been found on the Plains.

Indians, and also their pipes. It seems, therefore, that the distinction of Horse or Plains Indians employed in modern times to characterize these people as separate from Eastern, Southern or Western tribes may properly be applied to them in the Pre-Columbian period.

Students should bear in mind that the Kansas, Nebraska and Western Iowa forms are quite different from those of Missouri, Eastern Iowa and Southern Minnesota. I have not included the latter districts in this section, but have given them a separate chapter.

In Fig. 8 (page 24) I illustrated a number of beads from various sites on the plains. These were all found in the valley of the Kansas, and Mr. Brower publishes the following catalogue under the plate.

- a.* Shell and bone beads.
- b.* Glass beads from a mound.
- c.* Porcelain beads found by Dr. Brous.
- d.* Shell and bone beads from the Griffing Collection.
- e.* Bone beads from the historical collection at Topeka.



Fig. 89 shows a chert blade or agricultural implement full size. It is interesting to note that these agricultural implements form the connecting link between the Plains tribes and those of Missouri, Illinois and Arkansas; countries where spades and hoes are quite common. Along with the other illustrations presented it seems to indicate that the inhabitants of Quivira and Harahey were agriculturists to a certain extent, although primarily buffalo hunters. The spade was found near Stockdale.

NOTE.—The flint implements of the Plains do not fill all of Dr. Wilson's classes and subdivisions. Therefore, I have deferred the use of his scheme, "A Classification of Arrowpoints, Spearheads, etc.," until the eastern and southern sections are reached.

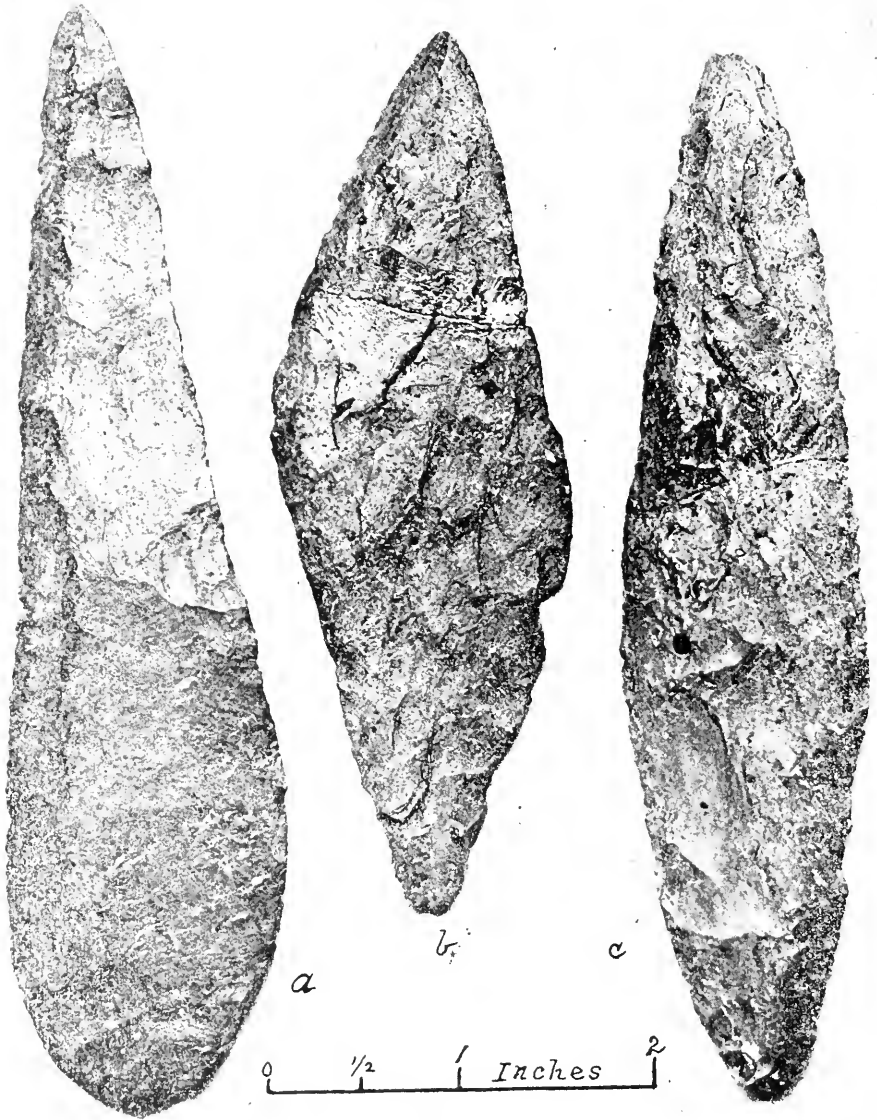


Fig. 90. Three flint knives from the Baldwin Village site on Antelope Creek. Scale is shown. These do not differ greatly from those found in Ills., Mo. or Ky.

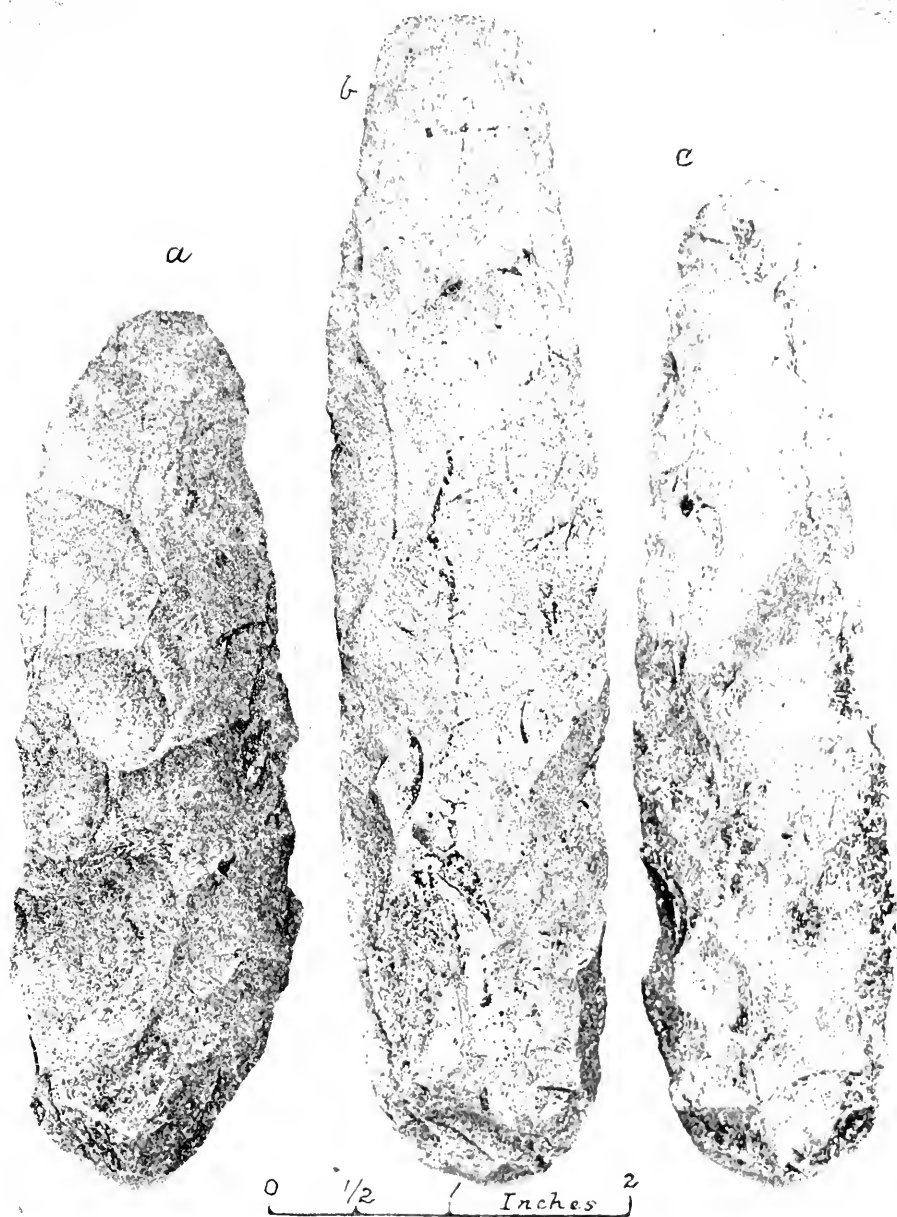


Fig. 91. Three flint knives from the Elliott Village site. These may be unfinished implements, or flint celts, or rude knives, say some archaeologists. Mr. Brower makes the difference between village sites quite apparent, and I regret that lack of space prevents me from entering into a more complete discussion of the subject.

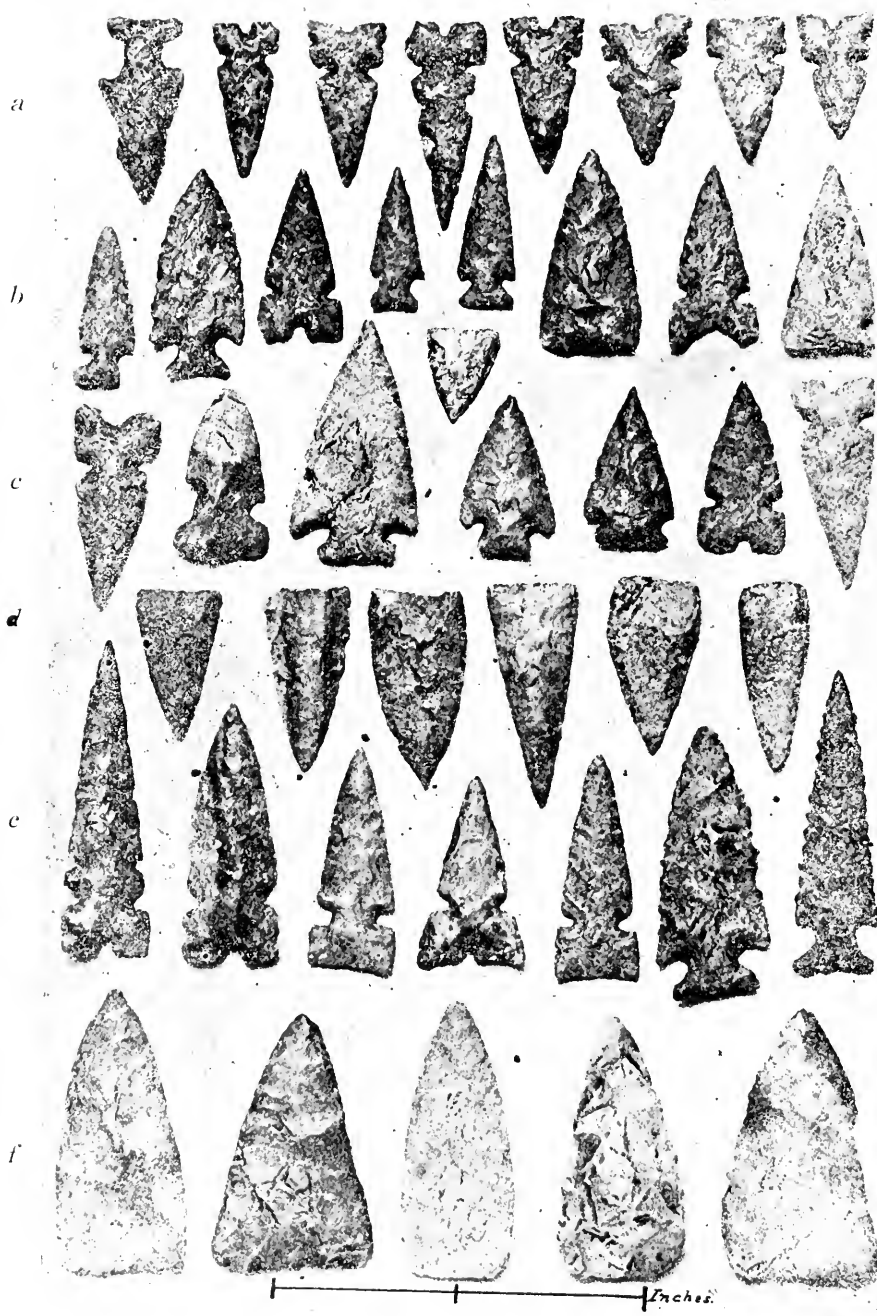


Fig. 92 is a grouping of the various forms of arrow-points from Wabaunsee and Riley counties, Kansas. The average collector will understand the different forms at a glance. But for the beginner I might add a few words of explanation.

The row marked *a* contains several of the "barbed and indented at base" kind. These

may have been used for both war and hunting purposes. The first point near letter *a* is somewhat unusual, having a long neck. *b* presents types described under Fig. 88. *c* shows numerous common forms, and *d* is a row of war-points. These latter are supposed to have been lightly fastened or gummed to the shaft. Having no barbs, they would easily become detached when the person shot attempted to withdraw the shaft. As the ancients had but an imperfect knowledge of surgery it was well nigh impossible to remove the detached points and death ensued where the wounds were at all severe. The row marked *e* contains several interesting arrow-points with square bases or tops, barbs, etc. Row *f* may be either small knives or war-points. The scale is shown.

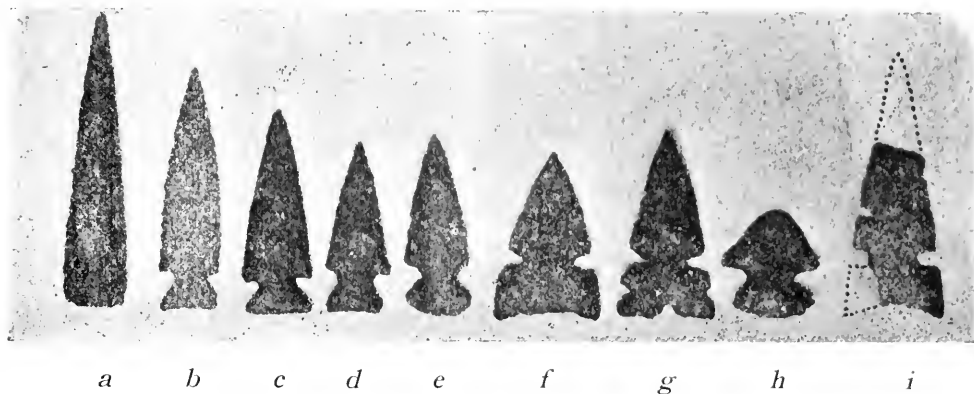


Fig. 88. S. 1-1. These arrow-points are typical of the entire Plains. Some like them occur in the East, but on the whole they appear to mark the dividing point between the eastern forms and those of the extreme West. *a* is a typical war-point, more slender than the average eastern form. *b*, *c*, *d* and *e* need no explanation, save that they are very well wrought. *f* has an exceedingly wide base. *g* has five indentations in the base and sides, a characteristic not uncommon in arrow-points found west of the Mississippi river. *h* is quite small, and *i* is broken. These and subsequent illustrations in the Kansas section are taken from Mr. Brower's reports, Quivira and Harahey.



Fig. 96.

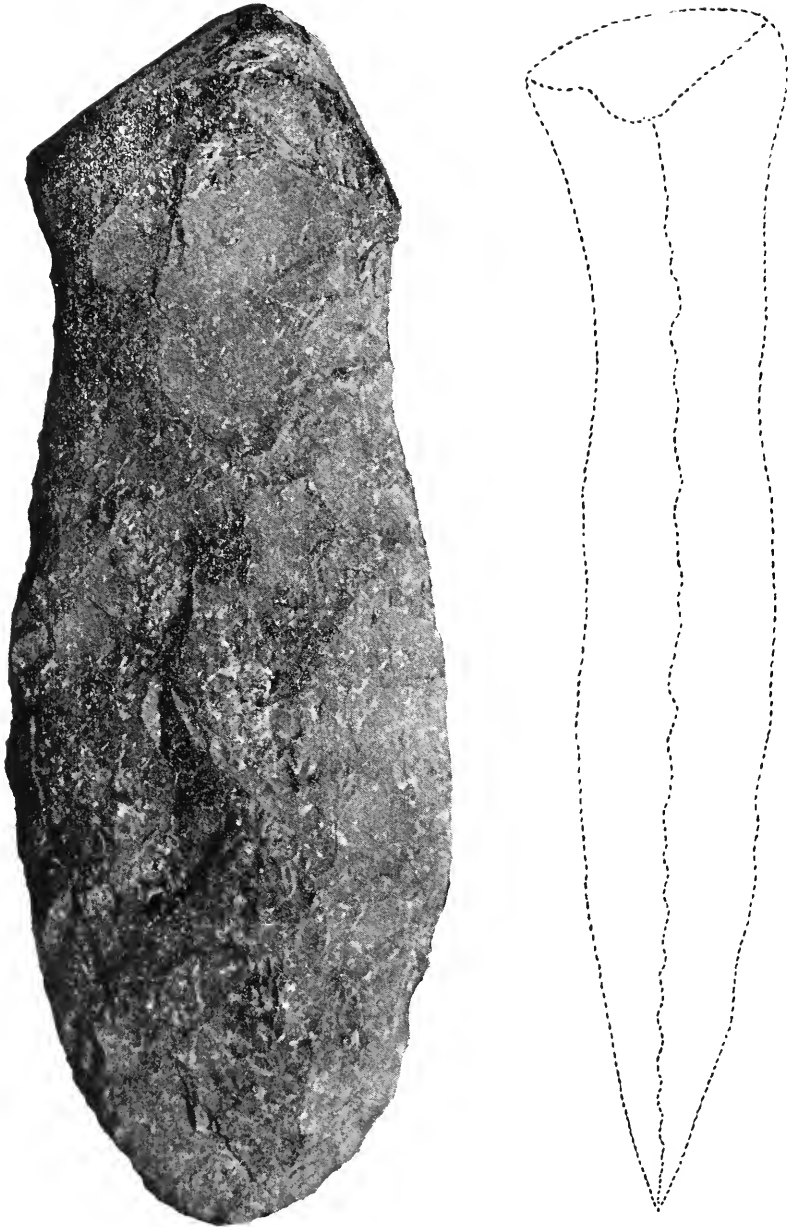


Fig. 93. S. 1-1. Elliot Village site, Geary County, Kansas. No one seems to have described the peculiar flint hatchets, blades, tomahawks, unfinished implements, small agricultural tools, etc., found in the Kansas Valley. I present all the various names because I must confess that I hardly know how to classify these hatchet-like forms. Mr. Brower calls them tomahawks, and they may have been used as such.

This specimen appears to have been somewhat worn at the base and I agree at once to the proposition that it was mounted in a handle. I see no reason why it should not have served as a "general utility tool" whether for chopping, fighting, digging or such exigencies as might arise. A cross section is also presented.

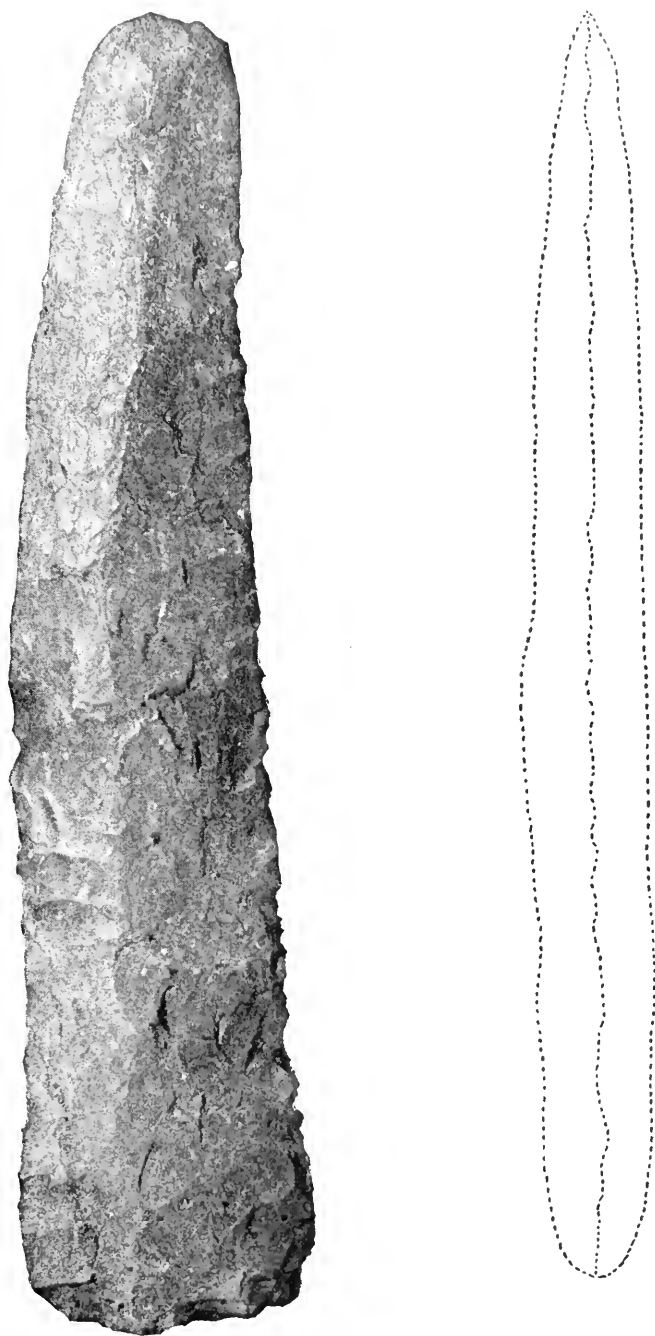


Fig. 94. A long, slender, celt like object (perhaps a knife) from Geary county. A cross section is presented. S. 1-1.

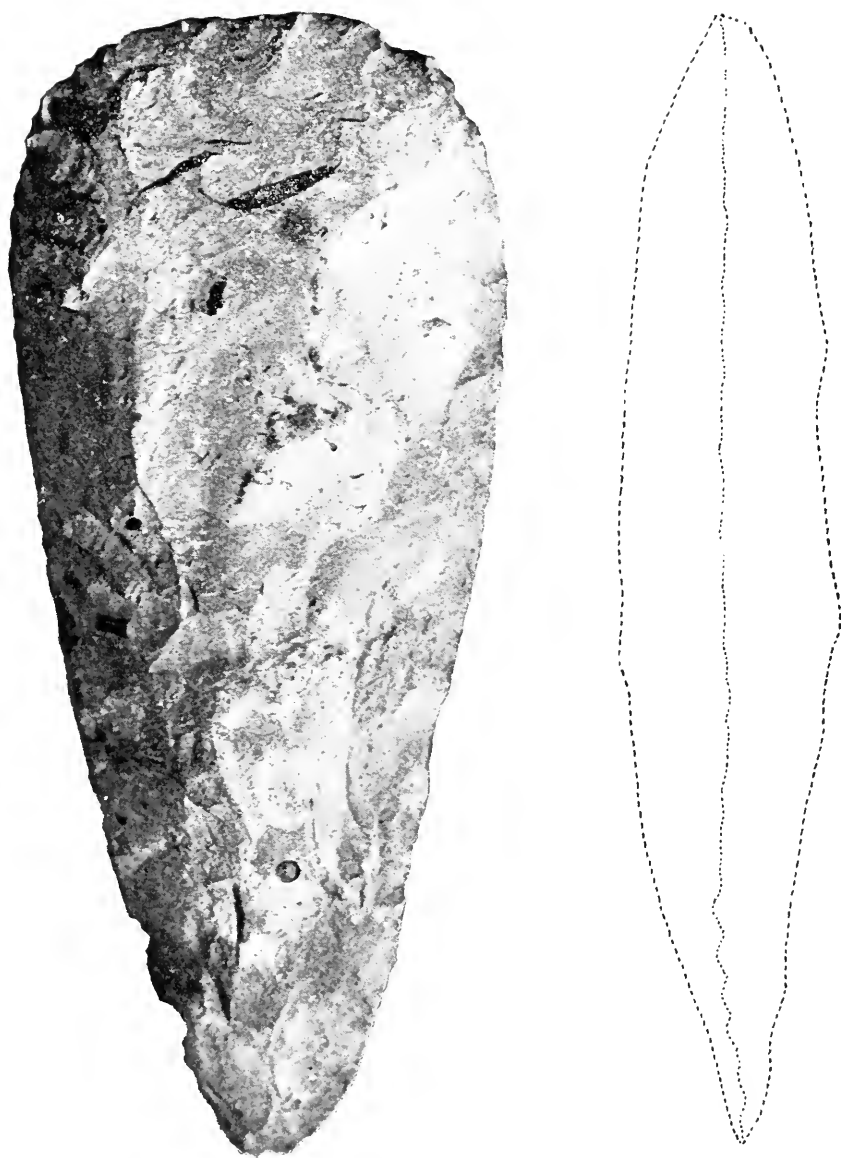


Fig. 95. S. 1-1. From Richards Village site, Pottawattamie county, Kansas. . Mr. Brower considers this a tomahawk. I think it is a small agricultural implement or flintc elt.

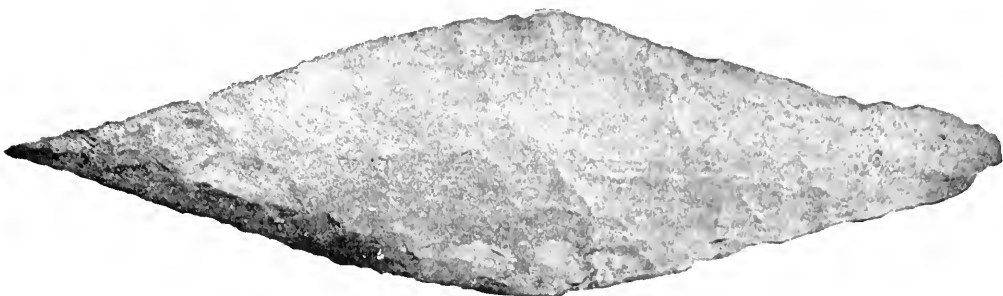


Fig. 97.

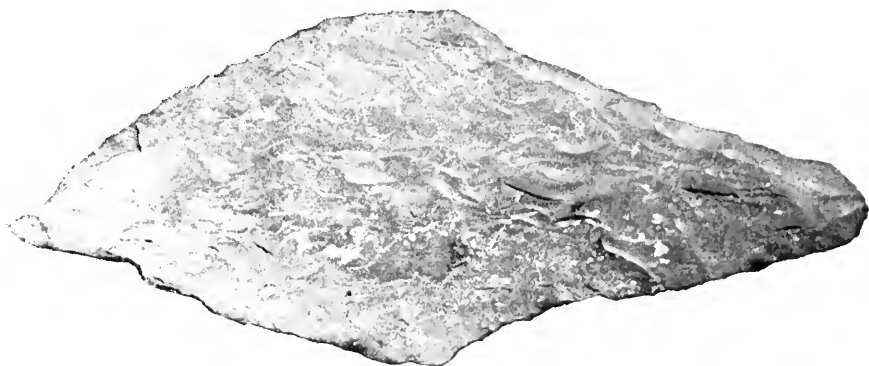


Fig. 98.



Fig. 99.

Figs. 96, 97, 98 and 99 are various knives from Harahey site. S. 1-1. Fig. 96 is interesting in that it is bevelled or chipped after the manner of the peculiar rotary arrow and spear-points of the Mississippi Valley. To a certain extent the same chipping is shown on Figs. 97 and 98.



Fig. 100. This is a very large and beautiful blade, common knife or agricultural implement from Quivira. I present a cross section of it. It is of the same kind of chert found along the bluffs, midway between the Kansas and Arkansas rivers. The flint formations or strata on these bluffs, by the way, furnished nearly all of the material for the manufacture of the various implements in this region. S. 1-1.



Fig. 101.

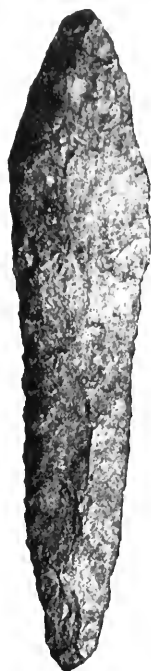


Fig. 102.



Fig. 105.



Fig. 103.



Fig. 106.

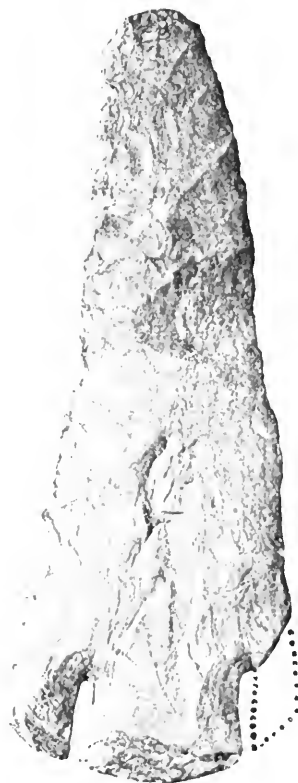


Fig. 104.

Fig. 101. A flint knife or lance-point from Quivira. Fig. 102. A knife blade from Harahey. Figs. 103 and 104. Spear-heads from Quivira site. Fig. 105. A peculiar knife from Harahey; shouldered for attachment to a handle. Fig. 106. A knife shouldered and notched at the head or top; an unusual form. Mr. Brower says knives like these are not found on the other sites. All S. 1-1.

SYNOPSIS.

Although Texas occupies a larger area than the entire New England States, practically, there has been nothing published upon the archaeology of the plains, valleys and hilly portions of that state.

Mr. W. D. Howren of Georgetown, and other correspondents describe the small hunting arrows of the Plains tribes, such as I have illustrated in Fig. 92. Mr. Howren also mentions flint axes, and a limestone maul or grooved hammer.

Dr. Wilson and Mr. Gerard Fowke mention the region briefly.

In Goliad county there is a flint workshop on the sand margin of Long Tree Lake, 2 miles



Fig. 107. A pointed knife from Quivira site. S. 1-1.

These Kansas knives are localized forms. That is, there is nothing like them elsewhere. Individual specimens may be found comparable with this or that figure, but as a class they stand unique. Figs. 90 and 91 emphasize the point I make. Such types as these show us that independent tribes or villages may be characterized by certain art forms. This is also proven in pottery, copper and other objects.

west of San Antonio river.* Chips, flakes, arrow-points, spear-heads and tools being on and in the clay under the sand.†

Mr. J. D. McGuire, in *Pipes and Smoking Customs of the American Aborigines* (Smithsonian Report, 1897, pp. 351-645), presents several maps showing the distribution of pipes: Tubular pipe—the Rocky Mountains, North Dakota, Northern Texas and Southwest. Catlinite pipe—Great Plains. Bowl and vase-shaped pipe—Western Kansas.

Correspondents may be cited for general information, etc.

*Dr. Thomas Wilson. Report of National Museum, 1897, p. 966.

†Mr. J. D. Mitchell, Victoria, Texas, letter of June 24, 1894.

Mr. A. L. Hopkins, of Oakdale, Nebraska, informs me as to the various objects in his region. Brown jasper seems to have been the favorite material out of which to finish arrow-heads, spear-heads, knives and scrapers. Objects of quartzite are occasionally found. He has seen a number of celts of agatized wood similar to those found in the cliff-dweller country. He has seen no ceremonials of the "banner," "butterfly" or other forms in Nebraska. A lot of stone beads were once dug up in Hamilton Co., Iowa.*

Mr. J. W. Peck, of Stewartsville, Minnesota, writes regarding the implements of his region. The grooved mauls or hammers are very common, also flint objects. Copper implements from his collection I have already presented in Fig. 70. Quite a number of grooved axes and a few pestles are found. The pipes are mostly catlinite.

He also (*Am. Archaeologist*, Aug. '98) reports a cache of 2 hoes and 50 knives and scrapers, all of brown jasper. Has over 300 specimens in his collection. Thinks the theory that "no prehistoric man lived in Nebraska" a mistake.

A mound in Van Buren Co., Iowa, "yielded two gray discs, each 4 inches in diameter, a grooved stone axe and stone chips."[†]

Mr. George I. Remsburg is well posted on Kansas archaeology. He describes hammer stones in *The Anthropologist*, 1895, p. 175; and a village site in Vol. I, p. 219.

Bone implements are found. Mr. S. V. Proudfit (*American Antiquarian*, Vol. III, p. 271) published a paper on implements of the region. Concerning one excavation, he says: "They found a large fragment of an elk's antler; a shoulder blade, fashioned into a rude implement, showing marks of work and considerable use; fragments of bone; a pipe; and a piece of deer's antler 4½ inches in length, polished at one end, as though used by rubbing; several flint scrapers; fragments of pottery; a charred corn cob; several large muscle shells, etc."

Dr. Wilson, in *Arrowpoints, Spearheads and Knives*, p. 968, describes workshop sites in Jefferson and Clear Creek counties, Colorado, and in central and eastern Wyoming. These papers (*Smithsonian Report*, 1897) also present a detailed classification of all flint tools and weapons found in America, north of Mexico.

Those readers who desire to post themselves on the Plains Indians will do well to read the Bureau of Ethnology and Smithsonian Reports, the *American Folk Lore Journal*, *Anthropologist*, etc. A few additional titles and suggestions are:

George Catlin's "North American Indians," London, 1876. H. R. Schoolcraft's "Indian Tribes of the United States," Washington, 1847. Both standard works. "Bibliography of Siouan Languages," James C. Pilling, Smithsonian Institution, 1897. Titles of the literature is presented in this paper. "Picture Writing of the American Indians," Garrick Mallery, Bureau of Ethnology Report, 1888-89.

George Bird Grinnell is considered an authority on the Pawnees and has just published numerous reports and books upon that tribe.

The Peabody Museum of Cambridge has published a number of valuable papers on the Omaha and other tribes by Miss Alice Fletcher. There is an interesting paper entitled, "The Sacred Ple of the Omaha Tribe," by the same author, in the *American Antiquarian*, Sept., 1895.

**The American Antiquarian*, 1884, Vol. VI, p. 42.

†Report for the Bureau of Ethnology. Dr. Cyrus Thomas on Mound Explorations, p. 112.



SECTION IV.
ARCHAEOLOGY OF NEW ENGLAND.

Professor GEORGE H. PERKINS
of the University of Vermont.

We know that at the advent of Europeans the whole Atlantic seaboard and most of the interior, from Hudson's Bay to the Carolinas, and west to the Mississippi, was occupied by tribes of the great Algonkin family. For this reason it would not be expected that collections of prehistoric objects obtained in what is now New England would differ materially from those made either north or south of that area. Nevertheless, while the larger number of the New England specimens are essentially like those found in adjacent territory, there are many that are not like objects of the same class found elsewhere.

Whether any of the New England specimens should be regarded as the work of paleolithic men is at present uncertain. There have been rude implements found here and there that, from their own character and from their location, suggested considerable antiquity, but until future discoveries add to our present knowledge we have no right to anything more than an opinion as to the antiquity of man in this region.

As to the often discussed question, whether the Eskimo ever lived along the Atlantic coast south of his present home in Labrador, or whether any tribes other than the Algonkin were former residents of the region, can scarcely be settled by evidence thus far obtained. It is certainly possible that some of the implements, ornaments, etc., which have been collected were used by tribes quite unlike those found here by the first white men, this may even be considered probable, but it waits for proof. At any rate we are safe in regarding by far the greater part of our specimens as Algonkin. Unquestionably, the Iroquois tribes, who for so long a time held not inconsiderable territory in the midst of the much greater Algonkin country, exercised no little influence upon the arts of their long time neighbors, enemies though they were. The effect of this is plainly seen in collections from those parts of New England, as the Vermont portion of the Champlain valley, which most closely joined the Iroquois territory.

I do not find it possible to divide the region we are considering into subdivisions. There is, as would be expected, a more or less noticeable difference between collections gathered on the coast and those from the interior. So, too, northern Maine and Vermont afford certain objects which do not appear in collections from southern New England, and the Champlain valley offers some peculiarities, but on the whole these differences are not sufficient

to establish archaeological areas. Therefore, it seems best to regard the territory of New England as a single province not at present capable of any accurate subdivision.

In general, as compared with the best specimens from the south and west, the New England specimens are less varied in form and less elegant in finish, and yet, while this is true of the average, single objects have been found here and there all over New England which are not inferior in any respect to the best from other localities. No more beautifully polished celts, no more perfectly chipped spear and arrow-points, no more elegantly shaped amulets have been found anywhere than here, but such specimens are fewer and the design is more simple than in some other localities. The material of our specimens is also usually less showy than is often seen in collections from other parts of the country.

True mounds, earthworks and the like do not occur in New England, and even village sites are not common. Everything indicates, what we know to be true, that the former inhabitants of this region were nomadic and unsettled.

BURIAL PLACES.

Although not common, burial places have been found in a number of localities. The most thorough exploration which has been made in any of these is that made under the auspices of the Peabody Museum of Harvard University by Mr. C. C. Willoughby, in Maine. Five different burial sites were examined and the results are fully given in a report published by the Museum.*

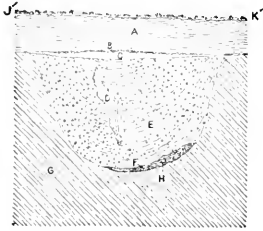


Fig. 108. Vertical cross section through a grave at Ellsworth, Maine.

- | | |
|--------------------------------------|---|
| a. Top soil. | b. Charcoal. |
| c. Ashes. | d. Discoloration caused by iye
from ashes. |
| e. Disturbed gravel within
grave. | f. Red ochre. |
| g. Undisturbed gravel. | h. Pear-shaped pendant. |

A large number of graves were opened in a most careful manner and many interesting facts brought to light. Apparently the graves at Bucksport, Orland and Ellsworth were those of the same people, for they are much alike. The following account given by Mr. Willoughby must serve as a type of the whole. "Nine inches from the surface a bed of white ashes with a maximum thickness of three inches was found, together with a few small fragments of charcoal (Fig. 108, c).† The earth immediately below the ashes was a dark brown color and very compact. Farther down the gravel assumed rich brown and yellow shades. Four feet from the surface a mass of red ochre (Fig. 108, f) was discovered at the bottom of the grave.

*Archaeological and Ethnological Papers, Vol. I, No. 6.

†For the use of this as of all the figures illustrating the Maine graves I am indebted to Prof. F. W. Putnam, Curator of the Peabody Museum.

"In nearly all the graves of this burial place dark earth masses shading into rich browns and yellows were noted just beneath the ash beds."

Fig. 109 shows a cross section of a communal grave in which were found a variety of objects and evidence that several bodies had been buried there. Fig. 110 illustrates some of the objects found in another of these graves. Of this Mr. Willoughby says: "Grave N contained neither ochre nor implements. * * * The earth above it had been removed to a depth of from four to twelve inches. * * * The upper remaining portion of the grave contained ashes and a small quantity of charcoal mixed with the gravel. The charcoal and ashes were thickest near the center of the grave. About nineteen inches from the surface and a little to one side of the center were the crumbling fragments of a human occipital bone, and twenty-two beads made by rolling strips of native copper" (Fig. 110). In none of these graves were more than small bits of crumbling bone found, all the rest of the skeletons had disappeared.

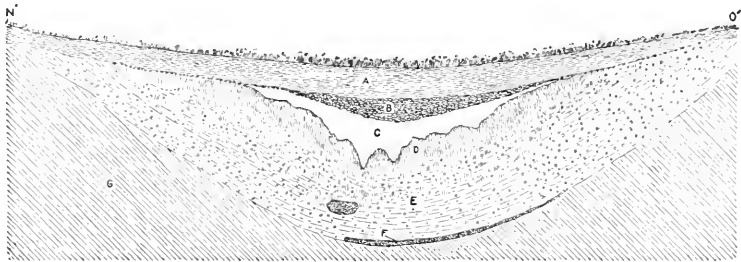


Fig. 109. Grave at Ellsworth, Maine. *a.* Top soil; *b.* Charcoal; *c.* Ashes; *d.* Discoloration caused by lye from ashes; *e.* Disturbed gravel within fire hole; *f.* Red ochre; *g.* Undisturbed gravel. Dark mass to left of *e*, red ochre and bone dust.

Of the method of burial in the Maine graves Mr. Willoughby says: "Judging from the graves of which outlines could be traced, there were three kinds of burials in this ancient cemetery. The first consisted of bowl-shaped cavities dug to a depth of from thirty-eight to fifty-three inches. Within the cavity the body was placed, probably in a flexed position, and accompanied by various worldly possessions of the deceased. The grave was then filled with gravel and a fire kindled over it. The second type of burial was similar to this, the principal differences being in the size of the grave and the number of bodies deposited therein. The third type differed from the others in having the body placed at length in a shallow grave. Perhaps the most characteristic objects found in these graves are the finely finished, slender points of slate which are shown in Fig. 111. There are sixteen of these in the Peabody Museum. The majority of these lance-heads are of compact green slate with cross section either lenticular, lozenge shaped or octagonal." *l. c.* p. 17. Pendants were also rather common, six being taken from one grave. Several are shown in Fig. 113, as are other objects. Fig. 112 gives other implements found in another grave.

These Maine graves are in some respects remarkably like some graves which were opened several years ago in northern Vermont at Swanton.* Unfortunately, the Vermont burial ground was so dug over by inexperienced collectors before it came under the notice of trained observers that no such account of it as that of the Maine sites can be given. In early days a pine forest was growing over the Swanton burial site, and it was not until this was largely cleared off that the graves were discovered. Some of the graves, twenty-five or thirty of which were found, were located, it is said, directly beneath large trees. Red ochre was found in most of the graves. Only a few fragments of the skeletons remained. Many of the objects taken from these graves closely resemble those found in the Maine graves. The Vermont graves, however, afforded a much greater variety of objects, and, as a whole, were quite superior to those from Maine. Some of them will be mentioned and figured on following pages.

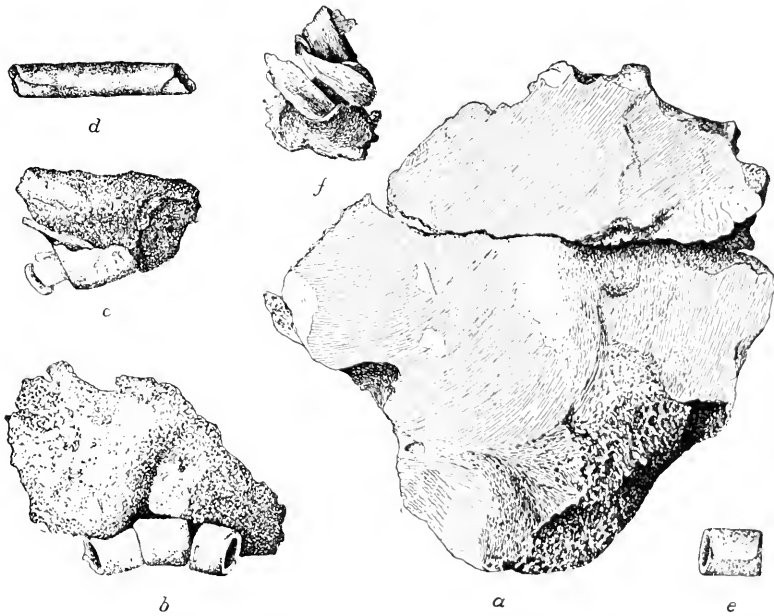


Fig. 110. Native copper heads and fragments of occipital bone. S. 1-1.

A mile or so from this ancient burial place, on the banks of the Mississiquoi river, there was a small cemetery used by the St. Francis Indians who had a village near by. Several of these graves were opened by the writer, assisted by one or two friends, but nothing of importance was found. Dr. F. H. Williams† says that "There are many graves in Farmington of unknown age," but no account of the exploration of any of them is given. In the same article what appear to be ancient hearths are mentioned. "On the highway from Bristol to Burlington, in Edgewood, there is a hill of glacial debris that rests on stratified gravel. On this hillside have been

*See description by the writer in *Proc. A. A. A. S.*, Vol. XXII, Part II, p. 76.

†*American Archaeologist*, Vol. II, p. 294.

seen low mounds, undoubtedly artificial, which had not been constructed since the white man settled in Bristol." An excavation was made into one of these mounds with the following result: "Digging down about two feet through soil that showed plainly marks of previous disturbance, we came to a level floor made of round cobble-stones, perhaps three feet long by two feet wide. When these stones were removed we found yet another layer, beneath which showed plain evidence of a severe heating. Between the two layers of stones was an inch or more of charcoal. The lower floor rested on undisturbed gravel.*"

In the following pages, while the leading classes of ornaments, implements, weapons, etc., will be noticed, little attempt at a classification will be made, and of the multitude of different forms that have been collected within the limits of New England only those which are of especial interest

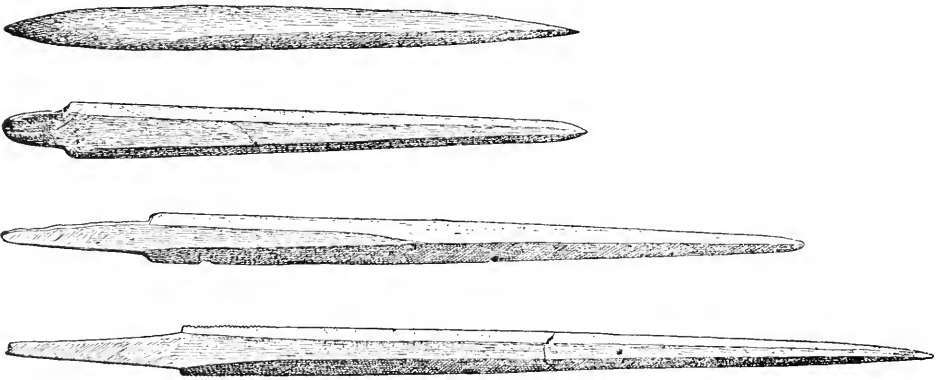


Fig. 111. Polished slate points or blades. From graves, Ellsworth, Me. S. 1-3.

can be mentioned. For a complete account of much that is only mentioned in this chapter the reader is referred to various articles the titles of which are given in the foot notes, and in the bibliography at the end of my Section.

SHELL OBJECTS.

Undoubtedly many of the larger bivalve shells were not infrequently used as they were found, for many of the common operations of the every-day life of the Indian, but for the most part these have disappeared, or, if found, they bear no distinctive marks to prove their use. Specimens of wrought shell are surprisingly rare if we except the wampum so frequently mentioned by the early writers. Beads, large and small, made from the columellas of the large univalves, have been found in the Vermont graves and in a few other localities. The small *Marginella conoidalis* of the Florida coast has also been found in several places and in considerable numbers. These shells are of a form which well fits them for use as beads, with no other working than such perforation as would make it possible to string them, and they were so used. Some of our larger beads are two inches long and half as

*American Archaeologist, Vol. 2, p. 294.

thick, while others may not be a fourth as large. I do not think that the very long, tubular beads common in many localities have occurred in this region.

SHELL HEAPS.

That clams, oysters, mussels and several other mollusks were commonly eaten there is abundant evidence in the numerous shell heaps found along the coast. Some of these heaps of refuse shells are very large, covering several acres to a depth of four feet. Other heaps are much smaller, but they very plainly prove the fondness of the Indians for shell-fish, and also that they visited favorite localities year after year for a long period. Many stone, bone and some shell implements have been rescued from these shell heaps which have been described by Wyman,* Abbott,† Mercer, and others. Besides the far more numerous and extensive shell heaps

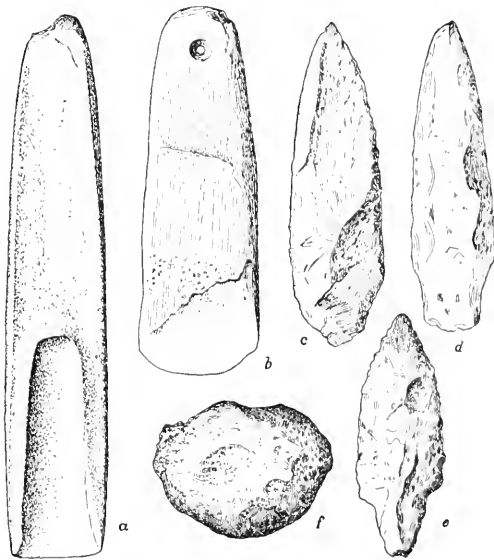


Fig. 112. Implements from a grave at Bucksport, Me., a, Gouge, b, Celt, perforated at upper end; c, d, e, chipped felsite knives; f, lump of pyrite used for striking fire. S. 1-3.

made up of salt water mollusks which are found on the coast, there are smaller ones inland made of the shells of fresh water clams. Mr. H. C. Mercer has examined several shell heaps on York River, Me., and found in them bone implements, pottery, bones of various animals and human bones. From the presence and position of the latter he believes that the makers of the heaps were cannibals.‡

OBJECTS OF BONE.

By far, the greater part of our bone implements have come from these same shell heaps. It is most likely that our knowledge of both shell and

*American Naturalist, Vol. 1, p. 560, plates 14-15.

†Primitive Industry, Chaps XV and XXX.

‡Exploration of Aboriginal Shell Heaps on York River, Me. Publications Univ. Penn., Vol. 6, p. 3.

bone as used by the aborigines is very imperfect, for we are forced to judge of the extent to which these materials were used by the number of worked pieces that we find. This is, necessarily, an uncertain criterion because of the perishable nature of the substances. The writings of some of the early explorers give some information as to the abundance or rarity of shell and bone implements among the tribes they visited. From the fact that in the nature of things many objects made of material that could not withstand the vicissitudes to which, in the New England climate, they would be subject, have long since disappeared, we may be quite certain that bone and shell were much more commonly used in the manufacture of tools and ornaments than would appear from present finds. We are told by some writers that the shoulder blades of large mammals such as the moose, elk, bison were used as spades and this is quite probable, but no such spades have

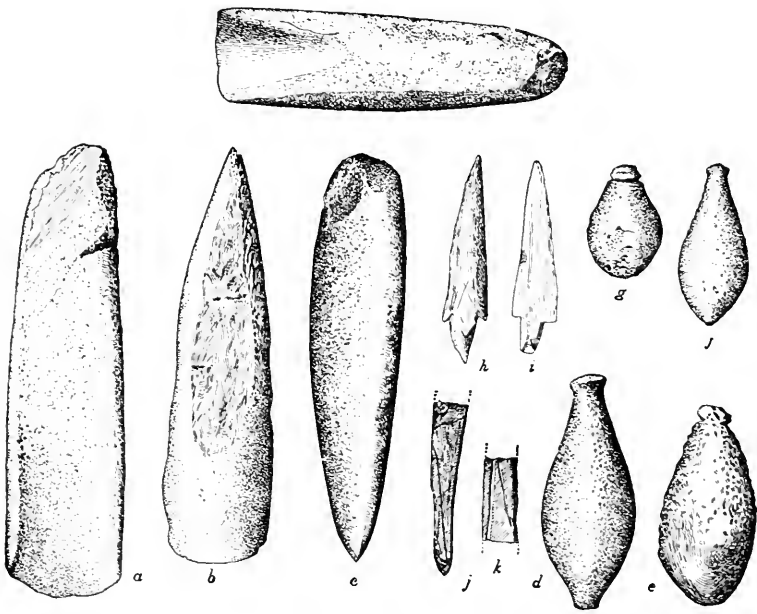


Fig. 113. Implements from a grave in Bucksport, Me. Gouges, Celts, Polished Slate Points, Pendants. S. 1-3.

been found in New England and yet it would seem most likely that if any bone tools were able to resist decomposition it would be such large bones as these. What we do find are small implements, awls, spear-points, polishers, and the like.

In the articles by Prof. Wyman, mentioned on a preceding page, a number of these are described and figured, and in Fig 114 several are shown from the Vermont shore of Lake Champlain. In Fig. 114, a is a tynne of a deer's horn only slightly worked. Similar specimens are not uncommon. It seems very probable that tools like these may have been often used in the decoration of pottery, though b is more likely a spear-point. Bone spoons have been found in Massachusetts. One of these is

figured by Abbott in *Primitive Industry*, p. 206. Dr. Abbott remarks: "This specimen is one of four now preserved in the museum of the Academy of Science at Salem. The four specimens were found in an Indian grave in Lagrange street, Salem, Mass." With objects that are made of bone there are sometimes found canine teeth which were apparently used as implements or ornaments. Except near the coast, specimens made of bone are very rare throughout New England.

OBJECTS OF COPPER.

Possibly because more enduring, or because more commonly made, objects of copper are far more numerous in our collections than those of bone or shell. So far as we can judge, all of our specimens are made of the Lake Superior native copper which was hammered into the desired form. If this is true, and it can scarcely be doubted, then there was a considerable trade between the tribes who held possession of the old mines and the southern and eastern tribes. We have evidence of a similar traffic with southern tribes in the shell beads, for the shells of which some of them are made are not found in the north. The little *Marginella conoidalis* does not live north of the Carolinas, but it is the most common species found among the beads of our New England collections, excepting the wampum. Of course, these things might have been obtained in war, but there is good reason to believe that trading of some sort was carried on among many different tribes all over the country.

Early writers speak of seeing large pieces of copper in the possession of Indians, but nearly all of the specimens that have been found in New Eng-

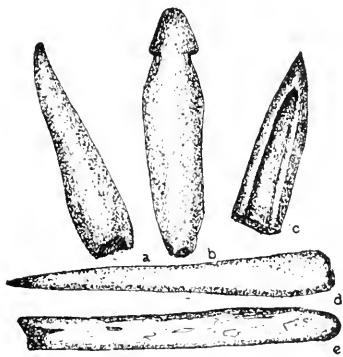


Fig. 114. Bone implements found near Lake Champlain. S. 1-2.

land are of no great size. It is interesting to find that copper is not only found on the surface, but that in both the Maine and Vermont graves copper objects were found. The beads shown in Fig. 110 are very much like others from the Swanton graves, one of which is shown, greatly reduced, in Fig. 115.

In Fig. 115 a few examples of copper specimens are shown. These are all from Vermont. Dr. Abbott figures a celt from Maine,* which is much wider and shorter than those figured here, but the form shown in the figure at a, c, d, is much more common in New England. Our Indians seem to have

* *Primitive Industry*, p. 416, Fig. 392.

done as did the prehistoric Europeans and patterned their metal implements after those of stone with which they were familiar. In Fig. 115, a, we have perhaps the largest copper celt which has been found in New England. It is eight and a half inches long and two and a half inches wide at the lower end. It is, as the cross section b in the figure shows, hammered to a high ridge on the side shown, while the other side is slightly concave. Through this ridge it is three-fourths of an inch thick. This specimen was found at the mouth of Otter Creek, near Vergennes, Vt. When found it was beautifully patinated. It has evidently seen service, for the upper end is battered as if by a hammer. The cross section b is taken at the middle. The edge is well formed and sharp. The other two celts, c and d, are from the Swanton graves. They were apparently finely made, but are badly corroded. Bars, like that shown at f, are not common. They were probably for ornament. The one figured is from the Swanton graves. It is quite regularly cylindrical, the ends being hammered to blunt points. It is a little over four inches long and not quite half an inch in greatest diameter. Quite a number of beads like that shown, g in the figure, were obtained in the Swanton graves. As is the case with stone implements, knives and spear-points are more common than any other of the copper objects.

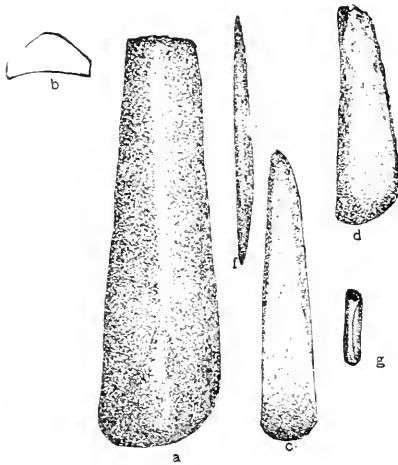


Fig. 115. Copper objects, a, c, d, Celts. Lefthand figure, Gouge. f, Cylindrical bar. g, Bead of rolled sheet copper. S. 1-4.

Fig. 116 gives four types of these full size. The middle figure is unusual in that the stem is toothed. Such a specimen may have been used as a spear or knife. It is very probable that many of so-called spear-points were really knives.

POTTERY.

It is quite remarkable how exact is the resemblance of the greater portion of our stone specimens to those of the west and south. It is also very noticeable that this likeness almost wholly ceases when we come to the earthenware. Although entire jars are very rare, fragments of greater or less size are in some localities very numerous. Many of these fragments are sufficiently large to give a very correct idea of the character and endless

variety in the decoration. Certainly no one can examine a large series of these fragments without becoming aware of the very great skill of the makers, both in managing the unbaked clay and in the use of tools with which it was ornamented. The form of the New England pottery, as we learn from the few entire specimens and from numerous large fragments, was always globular or sub-conical. The paste used in the manufacture of the jars was somewhat variable in composition. More commonly it was a mixture of more or less completely pulverized quartz, feldspar and mica, perhaps granite furnished these substances, and now and then other varieties of stone with clay. When the proper form was gained the piece was burned, sometimes until almost black, sometimes red, or brown, or so little

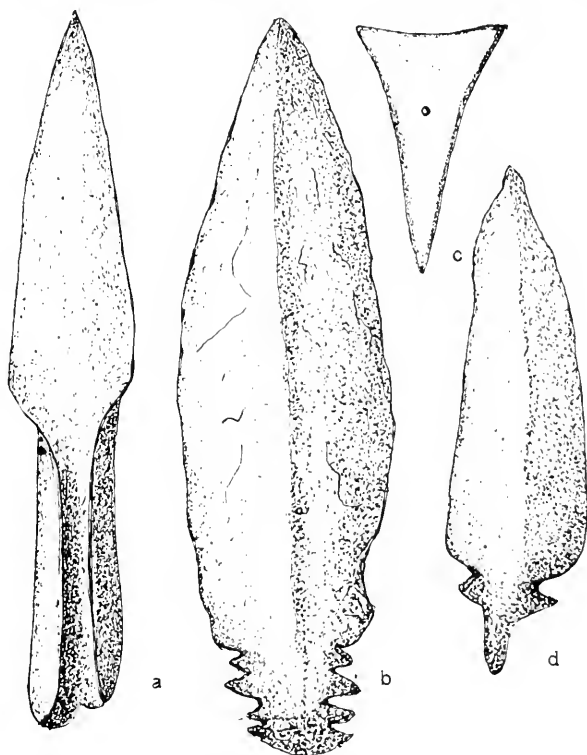


Fig. 116. Types of copper knives and points. Vermont. S. 1-1.

exposed to the heat that the clay is hardly changed in tint. Evidently, after the general mass was brought into the desired shape, it was coated inside and outside with a thin paste of clay, which gave it a smooth surface, and upon this surface the ornamentation is placed. This was always impressed into, or drawn upon, the unbaked clay. No example of a jar decorated by painted figures nor do figures in relief appear on the jars, though they do sometimes appear on pipes of the same material. The great variety seen in the forms of pottery from the Ohio valley or from many other localities, is not found in that from New England. Here, as we have seen, the shapes are few and simple, the only attempt at

anything like elaborate form being in the shape of the rim or upper portion of some jars. In these the rim, or it may be the upper half of the whole jar, is quadrangular, as in Fig. 118, and in very few instances it is five or even six sided. As Fig. 118 shows, this device gives a much more artistic effect than the circular rim. In addition to this, in jars of this more elegant sort, the edge of the rim may be scalloped, and this was, in some cases, very neatly done. No example of a jar moulded into the form of an animal, such as may often be seen in the pottery of mounds, has been discovered here. While some jars, especially those that were large and coarse, made probably for cooking, are not decorated at all, or very slightly, most are more or less covered over the upper half with indented figures. The figures which decorate the pottery of New England are numerous and, by different

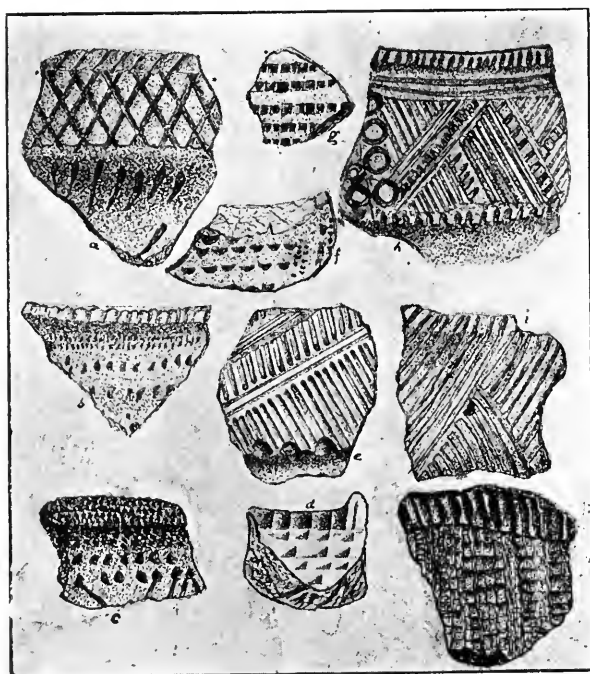


Fig. 117. Fragments of pottery, Vermont, showing a few of the many patterns. a, e, h, portions of the rim of square topped jars; b, part of the rim of a small circular bowl. S. 1-2.

combinations of similar patterns, the design is almost endlessly varied. I once counted three hundred different figures, or arrangements of figures, on a series of pieces of the rims of a lot of jars, the fragments of which had been found on the shore of Lake Champlain. These figures are, usually, of small size and consist of lines generally straight, but occasionally curved, dots, circles, triangles, crescents, squares, etc., as well as dentellated, zigzag, or scalloped figures an inch or more long. It is evident from the appearance of some of these figures, especially the latter, that stamps were used in making the impression. Fig. 117 shows the pattern on some bits of Vermont pottery. And here it may be noticed that, while what has been said of New England pottery applies to the whole area, yet it seems to be true that the finest and most varied specimens are obtained in the northern part, and

particularly in the Champlain valley. And it is quite probable that this is due to the influence of the neighboring Iroquois tribes, who were unusually expert and artistic potters, if we may judge by what specimens they have left.

The reader must not get the idea that all of the New England pottery is elegant. Rude specimens, rudely ornamented, are not uncommon, but yet the greater part is very well made and decorated. Considering the fragile nature of the material of which our jars were made, and the trying character of our winter climate, it is perhaps not strange that very few, I think not more than six, or possibly eight, entire pieces are now in existence. Many piles of fragments, which, if they could be put together, would make whole jars, have been found by every diligent collector, but alas, although

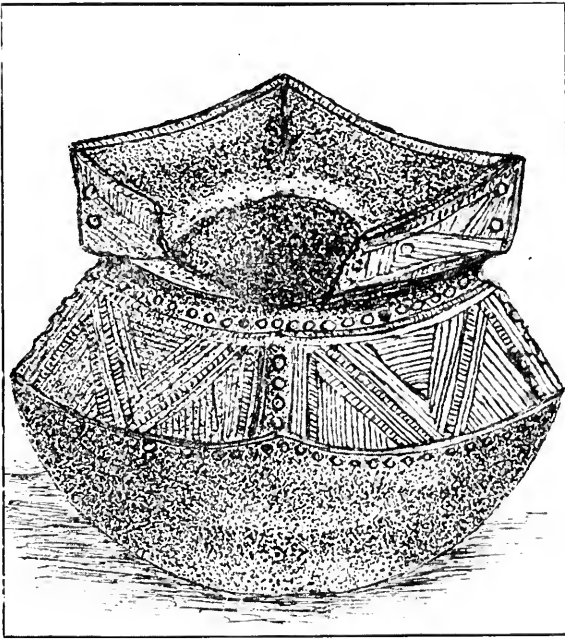


Fig. 118. Jar found in Colchester, Vermont. Now in the museum of the University of Vermont. S. 1-3.

originally a jar was buried in that place, all there is now is a little heap of sherds that no patience or ingenuity can restore to their former state.

What is, perhaps, the finest specimen of New England ceramics in existence is shown in Fig. 118. The form is not very uncommon. In Fig. 117 a, b, and c, are bits of square topped jars. As in many another jar, the decoration of this consists mainly of combinations of lines, but the pattern is more elaborate than usual, though not as delicate as in a few specimens. The jar is not a large one. Indeed, few of our specimens held more than three or four quarts. The largest of which I can find a record is mentioned in Thompson's Vermont. This, the author states, was found in Middlebury, Vt., and held twenty quarts. All trace of this most interesting jar is lost. There is in the museum of the University of Vermont a globular jar

which holds twelve quarts. The jar figured above holds nine pints when filled to the brim. It is seven and a half inches high, five inches in diameter inside the brim, twenty-seven inches in circumference around the largest part. It is of a very dark slate color which becomes almost black in places. It is very fortunate for the modern collector that the ancient potters made the rims of their jars thicker and therefore stronger than the rest, for thus we have preserved that portion which was always most extensively decorated. Some of our jars were not only ornamented over the outside, but also on the inside of the upper part. Fig. 119 shows a small piece thus decorated. The other pieces in Fig. 119 show some of the styles of decoration. Probably most of the New England earthenware was, as has been already stated, decorated by stamping or drawing with blunt points whatever figures the makers wished, but some specimens, as may be seen in Fig. 119, were figured by wrapping some woven or braided matting about the unbaked jar. The ancient potters did not wholly confine themselves to jars,

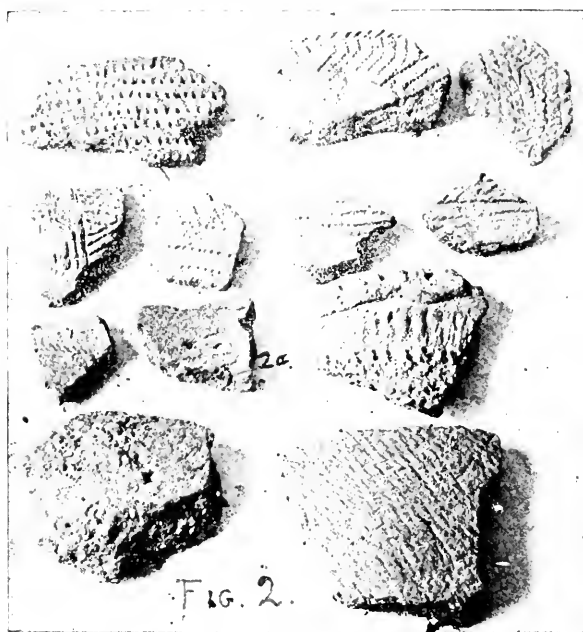


Fig. 119. Fragments of pottery from Connequot. Dr. F. H. Williams. S. 1-2.

but now and then made a pipe. Judging from the number of specimens found, they made few pipes, stone, apparently, being the favorite material for the pipe maker. The few pipes found are very well made, oftener of finer paste than that usually seen in the jars. Some of these earthenware pipes were shaped not unlike the modern clay article, but others were of different form, as the Figs. 120 and 121 show.

No other class of objects is more characteristic of the region under consideration than are those which are included under the head of pottery, and for this reason the subject has been discussed more fully than would otherwise have been necessary. While it is probable that most of the other

objects found in our archaeological museums were the work of the men, the pottery shows us the skill of the women, for they were usually the potters of the tribe.

STEATITE OR SOAPSTONE DISHES.

While soapstone dishes are not very common in most localities, it seems quite certain that many were made and used by the New England Indians. These dishes were not often large, nor deep, but shallow, oval or round, with no attempt at ornamentation in most cases. Fig. 122 shows some of

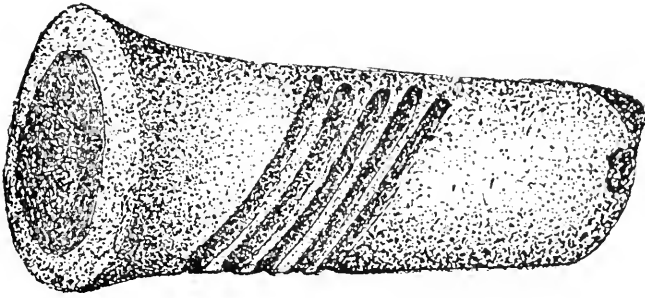


Fig. 120. Earthenware pipe, Vermont. S. 1-1.

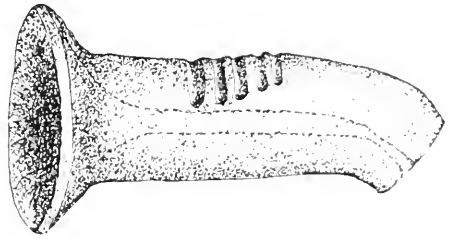


Fig. 121. Earthenware pipe, Vermont. S. 1-2.

the common forms. Sometimes there were projecting bits left on the ends, as in 3, to serve as handles. In a few specimens there is a slight attempt at decoration in the form of raised figures like a series of — — — — . Dr. F. H. Williams, to whom I am indebted for many of these figures, thus describes a quarry in Connecticut:

"In 1892 a beautiful exposure of an aboriginal quarry was uncovered in Bristol, with many bowls in various stages of finish still attached to the ledge. For the Indian first marked out his dish and finished shaping its bottom and side before detaching it from the rock. This separation, owing to the general irregularity of cleavage and frequent faults in the steatite, was often disastrous, as the many broken rejects about the quarry show. When the bowl was once freed from the ledge it seems to have been taken to some village site and slowly finished, being generally smoothly polished, both within and without."*

Mr. C. A. Greer has found localities near Millbury, Mass., in which there were a large number of broken dishes of many forms and with them

* Williams, Prehistoric Remains of the Tuxis Valley. American Archaeologist, Vol. 2, p. 50.

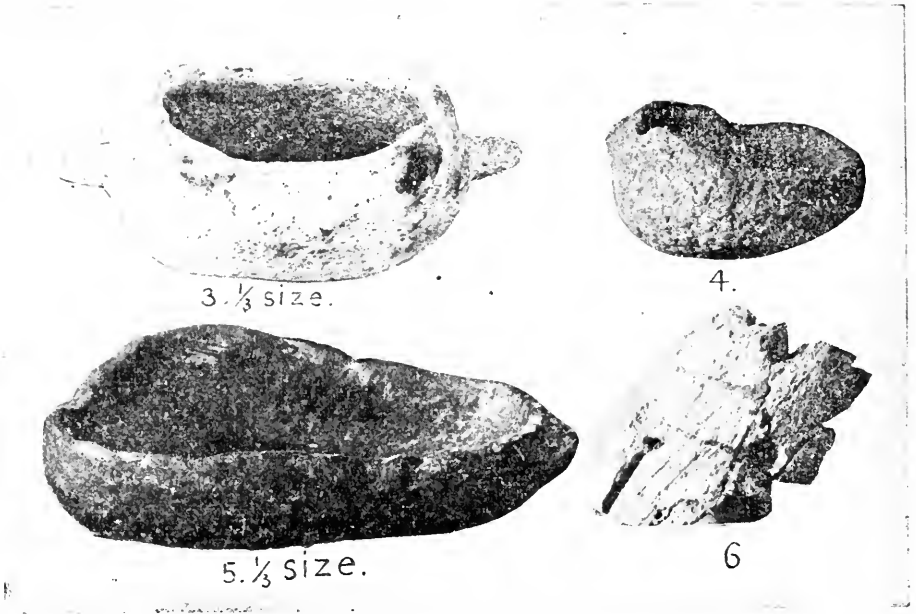


Fig. 122. Soapstone di-hes. Connecticut.

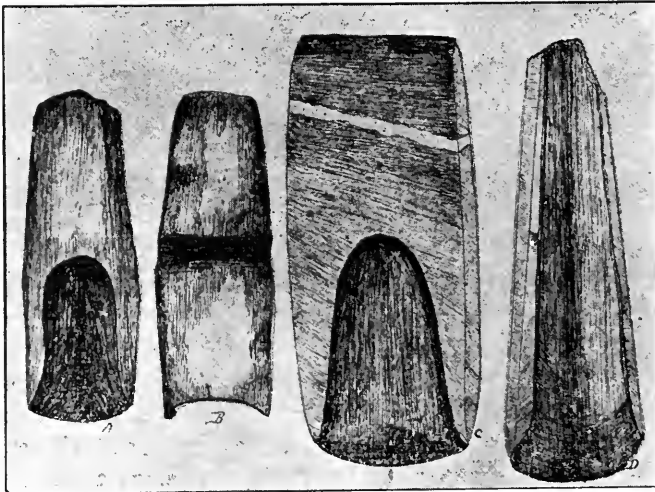


Fig. 123. Gouges. Vermont a, gray talcose slate; c, greenish slate; d, basaltic rock. S. 1-2.

many implements of hard stone which seem to have been used in working the steatite. Prof. F. W. Putnam has given a very interesting account of a steatite quarry in Johnson, R. I.*

"This ancient quarry consists of a seam of steatite about twenty-five feet wide, which at the time of my visit, in February, 1878, had been exposed for about ninety feet. * * * * The seam of soapstone was completely covered by the soil that had accumulated over the ancient chippings, and was discovered by the workmen after removing many cartloads of the pulverized rock. In clearing out the ancient quarry, over three hundred cartloads of debris of the manufactory were taken away, and this debris consisted almost entirely of the fine particles of soapstone which had been chipped off in the process of taking out the pot-forms from the mother rock. When this material had been cleared away, the peculiar character of the



Fig. 124. Polished gouge. Vermont. This is one of the finest examples of this class. Made of compact light green talcose stone, finely polished S. 1-4.

surface of the rock at once attracted attention, and then notice was taken of the fragments of pots and the large number of roughly pointed stones that were lying about bearing evidence of having been used. * * * * A careful estimate of the number convinced me that at last two thousand of these rude stone chisels had been found on the ledge or in the vicinity. They were all of nearly the same size, rudely chipped to a blunt point in one end, and roughly rounded at the other. Those brought to the museum vary in length from five to eight and one-half inches, and in weight from one to four pounds; the majority being of about seven inches in length and from two to three pounds in weight. These chisels were made from the hard stone of adjoining ledges, and their manufacture must have required considerable

* Eleventh Annual Report of the Peabody Museum, p. 275.

labor.*** Associated with the stone picks, or chisels were between seventy-five and a hundred large rounded stones weighing from twenty-five to a hundred or more pounds each, which might have been used as hammers for the purpose of breaking off large masses of the soap stone."

GROUND AND POLISHED STONE IMPLEMENTS.

Most of the varieties of ground or polished stone objects which have been found in different parts of the United States and Canada are represented in the New England collections, although some of them are rare and some rude as compared with those from other places. Few of them offer any marked peculiarities which distinguish them from similar objects found in the west or south.



Fig. 125. Gouges. Vermont. B, S. 1-2; c, S. 1-4.

GOGUES.

What are known as gouges, or hollow chisels, are perhaps more characteristic of New England than any other stone implements, for, while they are by no means unknown outside of New England, they are found here in greatest abundance and variety. Certainly nowhere else does this implement occupy so important a place in collections. Some of the gouges are rude, but usually they were finely shaped and carefully finished. Indeed, none of our specimens excel them in this respect, not even the amulets and ceremonial stones. The material is usually of the best, though it varies greatly in different specimens, some being of hard basalt or syenite, others of softer slates and stone. It is difficult to conjecture the purpose of some of these latter, for the material is too soft to endure hard work and yet the labor which must have been expended upon them is so great that they must have been of importance to their owners. It is also noticeable that some of the most carefully formed and elegantly finished of the gouges were made of

the same banded slate which was often used in the ornamental or ceremonial objects and that none of them show any evidence of use. On this account it may be that these finest of our specimens of stone work were not as has always been supposed, tools, but some sort of ceremonial stones. I find no evidence in any of the old writers, that such objects were so used but the character and appearance of the specimens suggests the idea. However this may be, it is certain that most of the gouges were really tools, such for example, as those shown in Fig. 123 and b in Fig. 125, while c in Fig. 125 and Fig. 124 show two of the more finely finished specimens which are so puzzling to the collector. The specimen a and b, Fig. 123, may have been an adze, the groove across the back being made in order to attach the tool to a handle. The gouges may be placed in two series in one

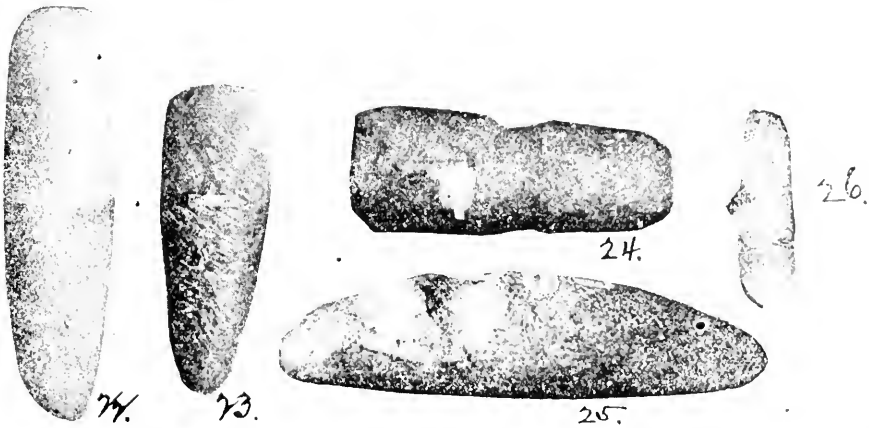


Fig. 126. Gouges or adzes. Connecticut. S. 1-3.

of which the groove extends from end to end, while in the other it is confined to one end. In most specimens the upper end is narrower than the other or hollowed end, but this is not always the case as c, Fig. 123, shows. This specimen is interesting because it is a combination tool, one end being gouge and the other chisel. Fig. 124 is an unusually fine specimen. The side not seen in the figure is strongly and sharply ridged. Fig. 125 c shows another of these fine gouges. This has the form of several very long specimens that have been found. One of these is nineteen inches long. This sort of gouge is always slender, well finished; sometimes of rather soft, sometimes of very hard stone; the specimen in the figure is nearly twelve inches long. Like Fig. 124, the back is strongly ridged so the cross section has the outline of a sharp gothic arch.

In Figs. 112 and 113 examples of gouges from the Maine graves are shown and many others similar to these were found in the same places. Indeed, the number of gouges obtained from these graves is very remarkable. By the courtesy of Dr. Williams Fig. 126 gives some illustrations of



93.



94



95.



96.



97.
1/4 Size

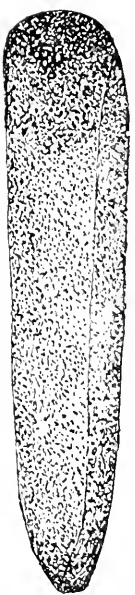


Fig. 128. Celt of Basalt. S. 1-2.

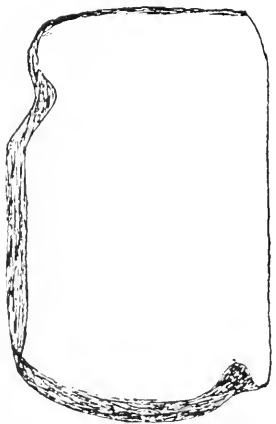


Fig. 129. Celt of slate. Vermont. S. 1-2.

Fig. 127. Celts, Conn. Dr. Williams.

gouges and adzes from Conn. Possibly all of these should be classed as adzes, for all seem to be made so that handles could be attached. Hump-backed specimens like 22, 23, and 26 Fig. 126, are not uncommon in New England. Copper gouges are extremely rare in New England, but Fig. 115 shows a fine specimen from northern Vermont. It is about seven inches long and weighs a pound. The surface is finely patinated. It is quite probable that bone and shell gouges were used by the ancient inhabitants of New England, but none have been found, though there are fragments of bone specimens that may have formed parts of gouges. Entire shells of the larger bivalves may also have well served the uses of the gouge.

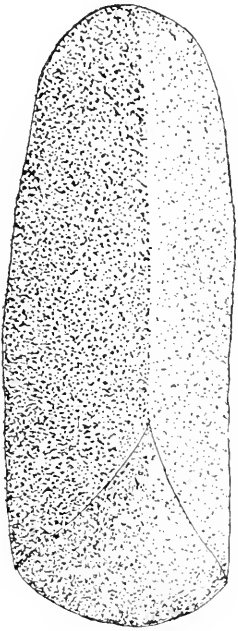


Fig. 130. Celt of Quartzite. Vermont. S. 1-2.

CELTS.

Under this term are included all those objects which are known as chisels, hand-axes, tomahawks, etc. It is a large class, including more than any other, and perhaps should be subdivided, but for our present purpose all the various forms may be grouped together. The celt was one of the first tools man invented. Its simplest form was, and is, merely an elongated pebble more or less roughly ground to an edge at one end. Above this rude form we have all grades until we come to the well shaped and beautifully polished specimens which are not infrequently picked up. As a rule the celts appear to have been made for hard work and are finished accordingly, but our best specimens are as well made as the finest stone objects. In size, as might be expected, the celts vary greatly, ranging from tiny ones not over three inches long and weighing but a few ounces, up to those that are ten or twelve, or more, inches long and weighing several pounds. Classified by form alone the celts may be placed in four

groups. Many are long and narrow, like 97 in Fig. 127, or Figs. 128 and 130.

In these the end may be nearly equal in width or the blunt end may be somewhat narrower. This is the most common form. Another common form is that shown in Fig. 127, (94 and 96) and Figs. 130 and 132 in which the outline is quadrangular. The third form is seen in Fig. 133 in which the outline is triangular, a form much less common than the two preceding. The fourth form is that of Fig. 130 in which the outline is linear like the first class, though the surface is not flat, but bevelled from a median ridge. This is not a common form. These groups are confessedly arbitrary, and to some extent they run into each other. But they furnish a convenient method by which to arrange and study a series of specimens. There can be

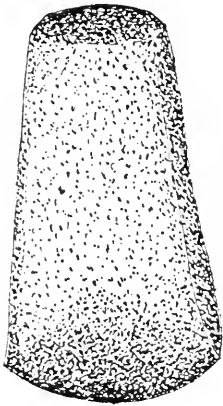


Fig. 131. Double-edged Celt. Granite. Vermont. S 1-2.

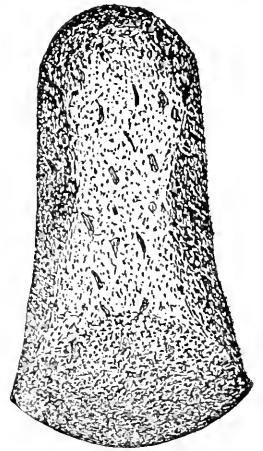


Fig. 132. Porphyry Celt. Vermont. S. 1-2.

no doubt that the smaller celts were often used as hand-axes, neither is there any doubt that others were when in use, fitted with a handle, and some of the early writers tell us how this was attached. In the American Museum of Natural History, New York, there is a celt in its wooden handle. A few of the celts were ground to an edge at each end, as in Fig. 131. Fig. 128 is unique in having the edges at right angles to each other. Fig. 132 shows a most neatly made hand axe, for it is evidently that of dark green porphyry. The labor of working so perfectly finished a specimen from a pebble of so hard a stone must have been very great. Many of these smaller celts were made of attractive material, as serpentine, fine grained granite, compact talcose slate, etc. and there are no handsomer specimens in our collections than some of these. It is possible that Fig. 129 which is of compact slate and quite thin, should be regarded as a knife rather than a celt. It might have been either. A very few celts occur which were not, like most celts, hammered and pecked into shape, but being made from quartzite or other flinty material, were flaked and chipped like the familiar Danish implements, the edge being in all cases ground smooth and sharp.

NOTCHED AND GROOVED AXES.

As we see in 123, the ordinary celt may be closely associated with the

gouge and in Fig. 129 it may resemble the slate knife, so we find it even more easily developing into the notched axe and this into the grooved axe. Notched and grooved axes are very much less common in New England than in most parts of the United States. Still, some very good specimens have been found as the figures show. A simple form of the merely notched axe is shown in Fig. 134. This axe is very well made from a porphyritic rock. It is evidently a slightly modified celt. For the most part these notched axes are small and many of them very well finished; some being polished. Some of these implements may have been used as adzes or, in case of the ruder ones, as hoes. Fig. 135 presents a very nice little axe which when well hafted may well have served as a tomahawk. With very few exceptions the grooved axes are larger than those that are simply notched and many of them are ruder. Fig. 136 is rather a rough specimen of very peculiar shape. It is made from a compact red sandstone. In nearly all of our axes the groove is above the middle, but never so near the top as in western

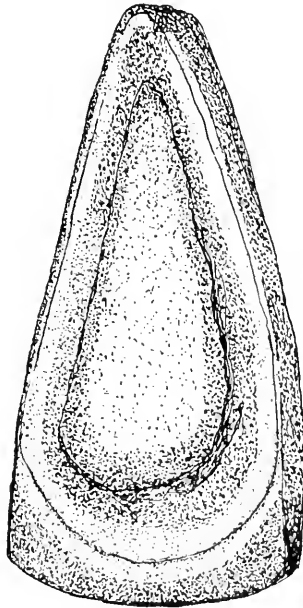


Fig. 133. Triangular Celt. Finely veined. Clay iron stone. Vermont. S 1-2.

axes. The groove extends entirely around the body of all our axes and is very seldom oblique, though it is in some cases as in Fig. 138. On the average the New England axes are six or seven inches long, two thirds as wide, and weigh three or four pounds. None of those that I have seen are polished, none are at all cylindrical as are some of the western axes but all are more or less narrowly oval in cross section. Fig. 137 and 138 may serve as very good average type of New England axes. As a rule our axes are not polished, the surface being left as it was finished by pecking. Fig.

139, which is from Dr. Williams, illustrates four axes, one notched and three grooved, from Conn. Dr. Williams writes that he has an axe found in Conn. that has a double groove. Most of the stone axes would prove very inefficient tools in the hands of any white man, but there is good reason for believing that, when used by those who were accustomed to them, they were far from useless. In the account of his trip through the lake which bears his name, Champlain speaks several times of the use which his savage companions made of their stone axes. He does, indeed call these axes very bad, but he also tells us that when the Indians wished to camp for the night they made a barricade by cutting down large trees with these axes and that they were able in two hours to make so strong a defence that five hundred men could not break through without great loss. Nor did they use fire in this instance, for Champlain says that when making the barricade they did not kindle a fire lest the smoke reveal their presence to their enemies.

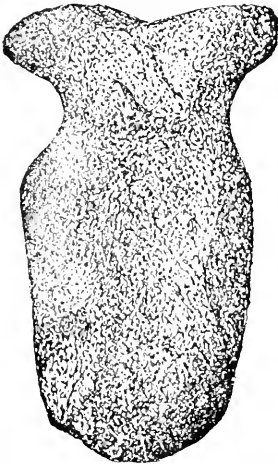


Fig. 136 Simple form of Notched Axe. S. 1-2.

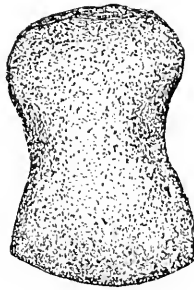


Fig. 135. Small notched Axe. Trap rock. S. 1-3.



Fig. 134. Rude Axe of sandstone. S. 1-3.

PESTLES.

Throughout New England there are found, though very sparingly, elongated cylindrical objects which were used in pounding corn, or whatever the Indians wished to pulverize. Fig. 140 shows two of these implements from Connecticut. These are well shaped and finished as are most of the pestles, some however, are little more than long slender pebbles worked a little at the ends. The finer pestles are from eighteen to twenty-nine inches long and about two in diameter. Most are of nearly uniform diameter from end to end, but some are thicker in the middle, from which they taper towards the ends. In different parts of New England long "pestles" have been found which have one end carved to represent the head of some animal. Most of these are unusually long, regularly cylindrical and well finished and they may have been used as clubs. The pestle shown in Fig. 140, 99 is peculiar. "Although made of a very hard stone, a hole about half an inch in diameter

has been drilled into its working end. Into this hole another stone of a yet harder nature has been perfectly fitted, the whole being ground off evenly.*"

Dr. Williams has a pestle thirty inches long, one end of which is carved to represent an elk's head. The short pounders so common in Ohio and the West do not occur in New England. Of course some sort of mortar must always have been used with the pestles, but only a few have been discovered. For the most part these mortars are simply large stones the outside of which has not been worked at all, while the bowl-shaped cavity is very regular. It is not always circular, but may be oval or elongated. Dr. Abbott figures a mortar from Massachusetts which is more globular than any other which I have seen from this region.†

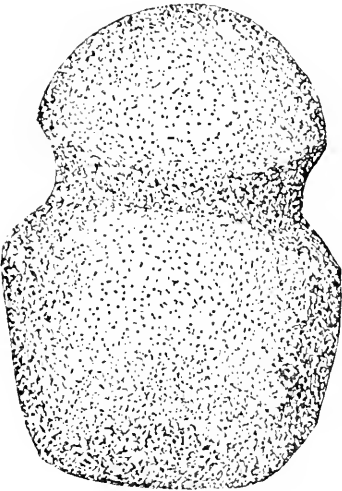
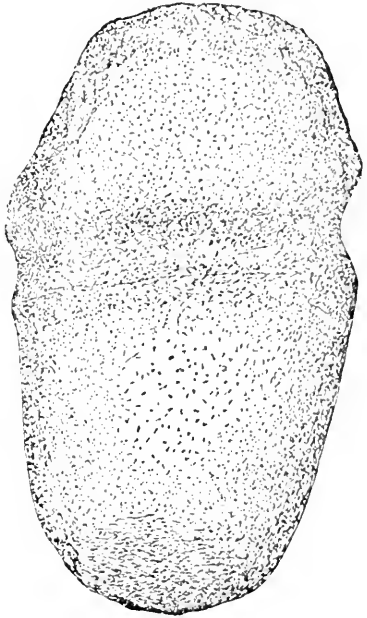


Fig. 137. Well made Axe. Worked from a syenite pebble. Vermont. S. 1-3.

Fig. 138. Axe with oblique groove. Made from grey quartzite. Vermont. S. 1-3.



HAMMERS AND POUNDERS.—PITTED STONES.

The shorter pestles suggest the stone hammer. Hammers are abundant and vary from the simple pebble which was not worked at all except by use to those which have been pecked over the whole surface. They vary in size from little balls used in chipping the smallest points to those that weigh several pounds. Throughout New England, the hammers are mere playthings compared with the big mining hammers of the Lake Superior region. Less numerous than the ordinary hammer, though far from rare, are the pitted stones such as are shown in Figs. 142 and 143. Some of the pitted stones may not have been used as hammers, but as small mortars for rubbing paint and the like. In Fig. 144, 27, we have a polisher made from a pitted

*Williams, *Am. Archaeologist*, Vol. 2, p 149.

†Primitive Industry, p. 150. Fig. 136.

stone. The other specimens shown in this figure are all polishers, according to Dr. Williams.

Grooved stones like those shown in Fig. 144, 28 and 30 are not uncommon and are found in a great variety of shapes. They are usually regarded as sinew dressers or at any rate intended for some such use or for sharpening tools. They are generally made of hard, gritty material and sometimes show that they have seen considerable service of some sort. In Fig. 145, 27 and 28, are shown two pendants or plummets. These are found of various sizes and degrees of rudeness over most of New England. It is not unlikely that collectors have classed in one group objects that should be separated, and that the more finely finished and elegant of these specimens were used as ornaments, while those that are ruder and larger were net sinkers, plummets or even sling stones. The two lower specimens in Fig. 145 are little paint cups, in all probability.

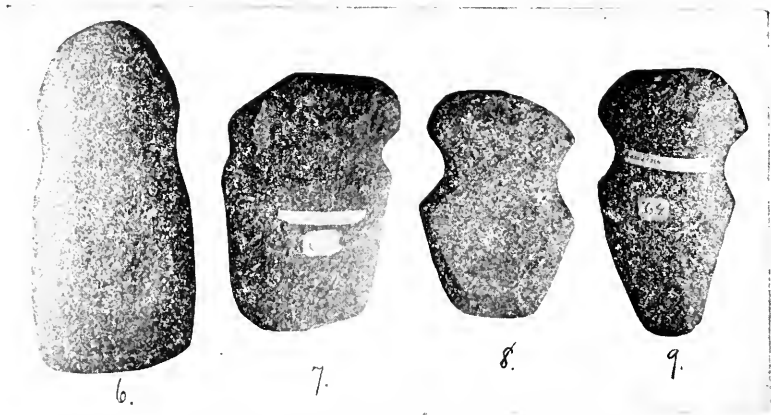


Fig. 139. Axes from Connecticut, S. 1-4.

SLATE KNIVES.

In a previous page gouges have been mentioned as especially characteristic of New England archaeology, but there is another class of implements which is quite as much so. I refer to the slate points and knives such as are shown in Fig. 111 and in Fig. 146. Although these objects differ very greatly in size and form, they yet have a common character and are of the same material, or at any rate that which is very similar. They are all ground and often polished, are almost always carefully shaped and do not appear to have been very much used. The slate of which they are made is either the red, blue, or drab roofing slate common in several localities, or it may be a light gray compact talcose slate. These slate implements present great variety in form, scarcely any two of them being precisely alike. It is not possible to think that so different objects, as, for instance, that shown at b, Fig. 146, and d, or e, of the same figure, were all intended for the same use, but rather that the variety of form indicates variety of use. Some are so slender and fragile that any use would seem likely to destroy them. For

instance, in Fig. 111 the longest point is nearly fifteen inches long and only about three-fourths of an inch in greatest width, and b, in Fig. 146 is nine inches long, one and a half inches wide and very thin. It is difficult to believe that such an object could do very much service, either as a tool or weapon. Specimens of this sort are sometimes found which are much wider than those mentioned. One of these is five inches long and three inches wide and thus approaches the large semielliptical slate knives. It is noticeable

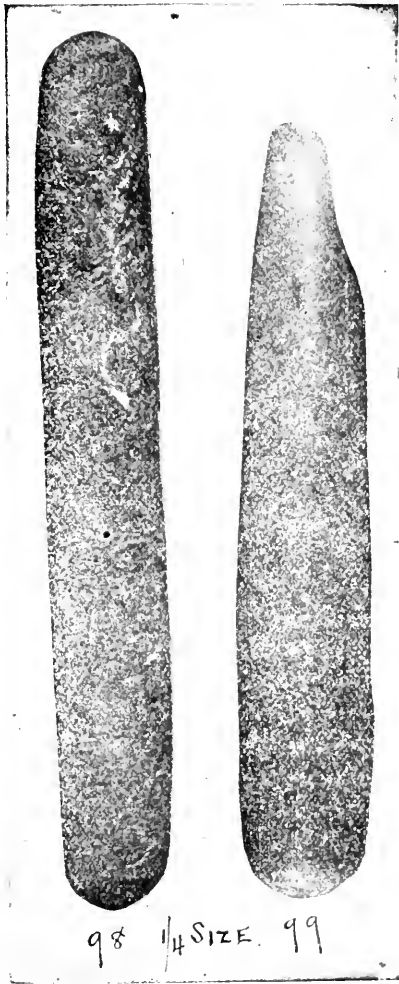


Fig. 140. Pestles. Conn.



Fig. 145. Pendants 29, 28. Paint Cups, 27a, 28a. Conn.

that nearly all of the kinds of slate knives we are now considering have been found in Northern New England, in Maine and Vermont. It is also noticeable that the specimens found by Mr. Willoughby in the Maine graves very nearly resemble those found in the Vermont graves as well as elsewhere in



Fig. 141. Sketch after Schoolcraft. Showing the probable mode of using the stone pestle. Courtesy of Dr. Williams.

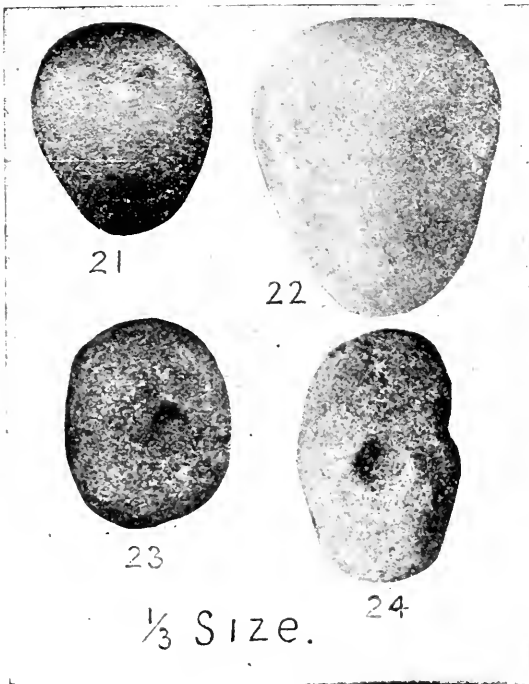


Fig. 142. Pitted stones. Connecticut.

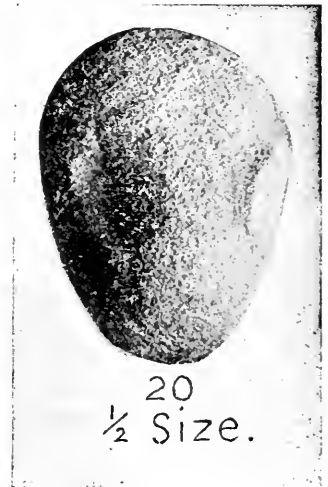


Fig. 143. Pitted stones.

that state. Some of the Vermont specimens not figured are very much like the left hand point in Fig. 111, both in shape and material. May such specimens not be called daggers?

SEMILUNAR KNIVES.

As we have seen, the linear knife, like a Fig. 146, passes through a regular series of forms in which the width gradually increases in proportion to the length, until we come to the oval and semilunar knives such as those in Fig. 147 which are from Dr. Williams' collection of Connecticut forms. Similar knives are found in many parts of New England and elsewhere. The same sort of knife is in common use by the Eskimo and it is not impos-

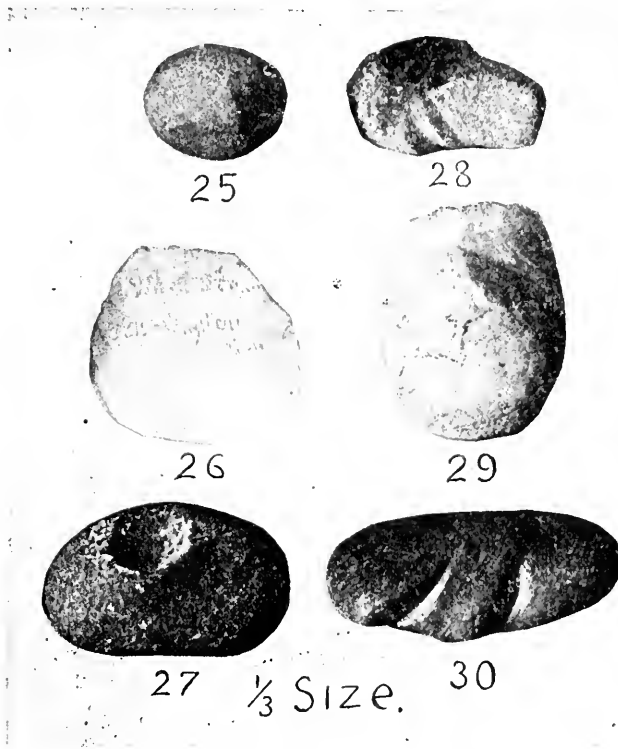


Fig. 144. Polishers and sharpening Stones. Connecticut.

sible that such knives were obtained by the tribes of the New England region from these people by trade or war. It surely is not necessary to suppose the former occupation of New England by Eskimo to account for the presence here of these or other implements. The Eskimo may have lived in what is now New England before the Algonkins occupied it, but the evidence must be more convincing than at present appears in the stone implements to be accepted. Some of the semilunar knives are much larger than those at the top of Fig. 147. Fig. 148 shows a specimen of the same slate as that of which many of the knives are made. It may be a sort of edged knife or scraper, or it may be simply an ornament of some kind.

PIPES.

If, as we have supposed, the pottery of the aborigines gives the best examples of the technical skill of the women, we may in the same manner consider the pipes as the best work that was produced by the men. It is true of the whole country that no other class of stone objects exhibit so great skill and so much artistic feeling as do the pipes. For this reason especial interest always centers upon the pipes in any large archæological collection. Probably there is no particular sort of pipe which is to any degree characteristic of New England. Our pipes are much like those found

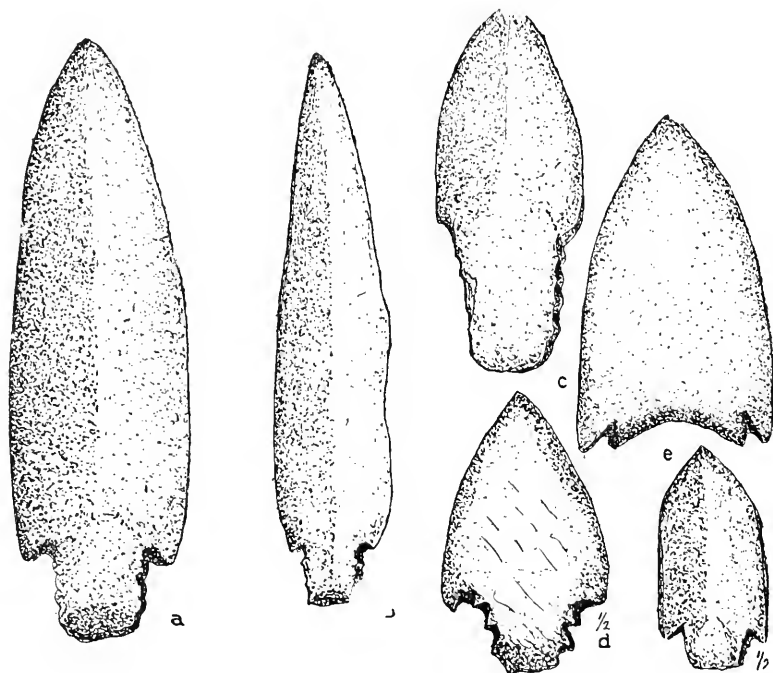


Fig. 146 Slate points. Vermont. a, c, d, and e, S. 1-2. b, f, S. 1-3. a, d, e, red slate. b, drab talcose slate. c, f, grey roofing slate.

south and west of us. They do not, however, exhibit so great variety or elaborateness in the patterns used as may be often seen in these latter regions. In finish they often equal the best of the mound pipes, but they are in comparison usually of very simple forms.

While the Indian often smoked his pipe, as does the modern white man, merely for pleasure, it is well known that the pipe was an indispensable part of every great ceremony and therefore that it was inseparably associated in the Indian mind with all that was solemn and important. The pipe was probably his most cherished treasure. It is then, not to be wondered that the Indian put his best art and most painstaking work into his pipes. It is noticeable that animal forms so conspicuously absent in our specimens of every class, should appear more commonly in the pipes than anywhere else. Yet such forms are not common even in the pipes and

are rather rudely executed when attempted. Fig. 149 shows several examples of New England pipes, though it is hardly possible to present a group that is at all representative, for each pipe is like no other. Many forms not shown in the figure have been found. The platform pipes, common elsewhere are occasionally found in New England. In Fig. 149 A, is a little pipe so simple in form that one would think that it would be a common variety, but it is not. It is made of dark steatite, smooth, but not



Fig. 147. At the top, semilunar slate knives. At the bottom, rude knives. Conn.

polished. B, is a very peculiar pipe which appears to be fashioned after some quadruped. The figure is evidently a good deal conventionalized. The row of pits around the top of the bowl appear to have been intended, as were those in G, for the insertion of some different sort of material, but if this is so, either the design was not carried out or the inserted bits were lost. As is the case in most of our pipes, the material is steatite. C, is another animal pipe of rather unusual form made of light grey mottled limestone. Like several of our pipes, it has a perforation through the lower end

for suspension. G, is another uncommon form as it is only very rarely that any portion of the stem is made of the same piece as is the bowl. This is made of a very pretty dark clouded gypsum, handsomely polished. E, is also made with stem and bowl in one piece, the end of the stem being broken off. Besides these two I have seen no other New England pipe of this sort. D, is a curious double bowl pipe of dark green steatite. F, is a most interesting pipe and is one of the exceedingly few stone objects found in New England, that are ornamented with carvings representing the human face. A similar face is carved on the opposite side. The cavity in this pipe is unusually large. As may be seen in C, and G, there is a hole at the lower end through which to pass a cord for suspension. In none of these specimens was the bowl bored out, or at least this was not the final process, for in all longitudinal furrows are evident which must have been made with a pointed tool thrust into the cavity. In Fig. 150 three tubular pipes are shown which are strangely like forms common on the Pacific coast. A half dozen

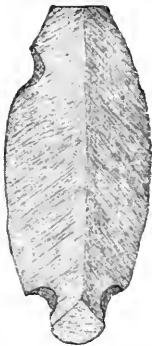


Fig. 148. Knife of drab slate. S. 1-2. Vermont.

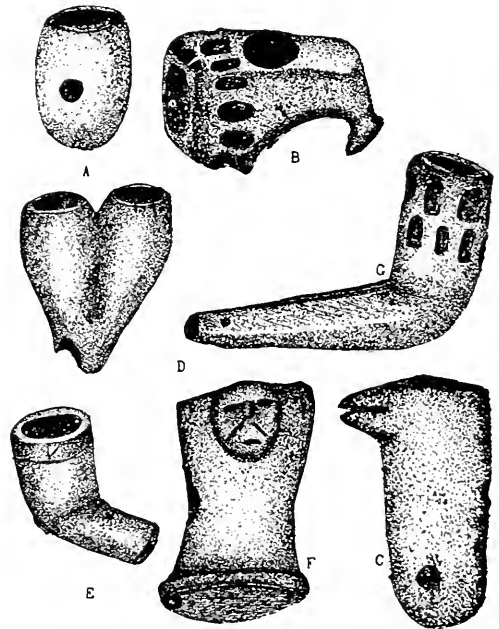


Fig. 149. Stone Pipes. S. 1-2. Vermont. For description of these, and other Vermont pipes, see article in *Popular Science Monthly*. Vol. 44, p. 238.

of these were taken from the Swanton graves and several others precisely like them, have been found in other places in Vermont. Dr. Abbott also figures one from Lawrence, Mass., *. Dr. Abbott remarks of these straight pipes—"The pipe used by the Shoshones at a ceremonial smoking and speech making in honor of Capts. Lewis and Clarke is described as 'made of a dense, but almost transparent, green stone, very highly polished, and two and a half inches in length, and of an oval form the bowl being in the same line

**Primitive Industry*, Page 330, Fig. 322.

with the stem.' A small piece of burnt clay was placed at the bottom of the bowl, to separate the tobacco from the end of the stem. This was an irregular round figure, not fitting the tube perfectly close in order that the smoke might pass with facility."*

Except that the pipes seen in Fig. 150 are larger than that just mentioned, they correspond fully with the description, even to the plugs in the ends, for such an irregularly fitted stopper was found in several of the Vermont tubes, only instead of clay it was made of stone.

As the figure shows, the shape of these pipes varies somewhat. They are all made of a compact, but not very hard clay slate. They vary in length from six to fourteen inches and in diameter from an inch to an inch and a half. The bore is quite small at one end, while at the other it is as large as the tube allows. C, in Fig. 150 bears a rude inscription, if it deserves to be so considered. There is what appears to be the outline of a hawk, beneath which are some rude characters. Whether this is the sign manual of the owner or what it does signify, if anything, it is not easy to determine. All the tubes are carefully made, and certainly, they were not finished without a large amount of labor. Several stone pipes have been found in New England the presence of which is difficult of explanation.

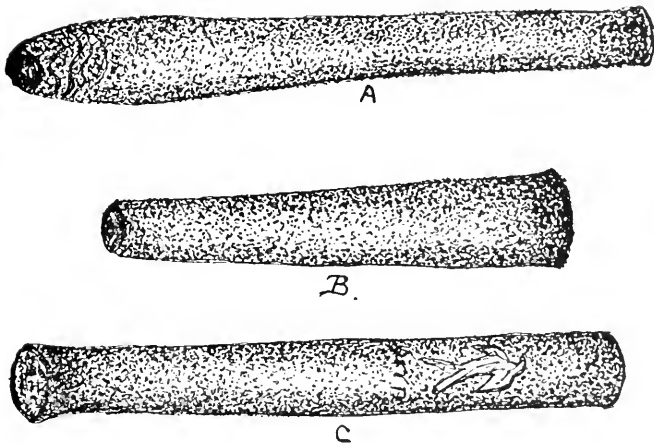


Fig. 150. Tubular pipes. Vermont. A, about one fourth full size. B, C, one third full size.

They may have in some way reached this part of the country in the way of trade, or possibly have been brought by a white man in recent times and lost. One of these is a very elaborately carved pipe of dark slate evidently made somewhere on the North-west coast, for the carving is very characteristic. It was found near Plymouth, Mass.†

Another is a large pipe of the regulation red pipestone which was plowed up in a field in Vermont not very far from Burlington.‡ The earthenware pipes have already been discussed in connection with pottery.

*Abbott, l. c. p. 329.

†Abbott, *Primitive Industry*, Page 324, Fig 318.

‡Pop. Science Monthly Vol. 44, p. 244, Fig. 10.

DISCOIDAL STONES

Discoidal or Chungkee Stones of a rather rude sort are now and then picked up in New England. Some few of these are fairly well made, but the surfaces are almost always flat. The only specimen so far as the writer is aware, that is at all the equal of the best specimens found in other parts of the country was taken from one of the Swanton graves. This is a small example of its class, but it is very perfectly made. The material is a light grey quartzite. The surface is not polished, but is smooth. The upper and lower sides are concave, and the edges a little convex. The diameter is three inches, while at the edge the thickness is a little over one inch.

CEREMONIAL OBJECTS.

Under this heading it is convenient to group a variety of, usually, regularly shaped and nicely finished objects, most if not all, of which appear to have been designed either as ornaments, or emblems, or insignia. They are made from the handsomest available material and form conspicuous features in all large collections. Fig. 151 shows three of the simplest forms



Fig. 151. Gorgets, Connecticut. 29 green banded slate; 30 light slate; 31, black slate. Dr. Williams.

of this class of objects. Number 29, is a very good example of a gorget or two-hole stone, while the other two are one-hole stones or pendants. Other specimens have quite different forms, but the general character is the same in all. They are most often made of some sort of banded slate, though other kinds of stone are sometimes used. The outline may be less simple than in those figured and they are generally less rudely formed than that in 30 of Fig. 151. A considerable number of fine specimens of these objects have been found in and about the Swanton burial place. The celt, if such it was, figured by Mr. Willoughby, Fig. 113, b, page 92, is suggestive of such a pendant as No. 31 in the above figure and may not have been merely a tool. Another and quite different class of ceremonial stones is shown in Fig. 152 also in 38, 39 and 40 of Fig. 153. It would seem prob-

able that none of our specimens required a greater amount of labor in their construction than these banner stones, for not only are they laboriously shaped, smoothed and polished, but after this is done, then they must be bored, apparently for the reception of a handle. It is true that they are most common of moderately soft stone, though some are of quartz, granite and other by no means soft materials. The hole is always large, from one fourth to one half inch in diameter, or in exceptional cases, more, and it is always neatly done. Occasionally, the winged or "butterfly" form which is the most common is replaced by more globular shapes. Perhaps the

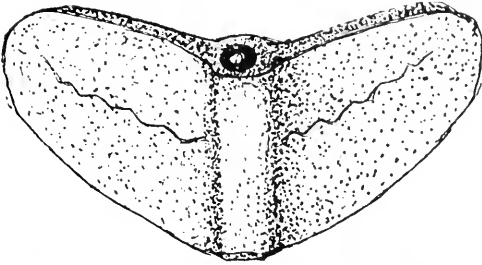


Fig. 152. Banner-stone. Vermont. S. 1-2.

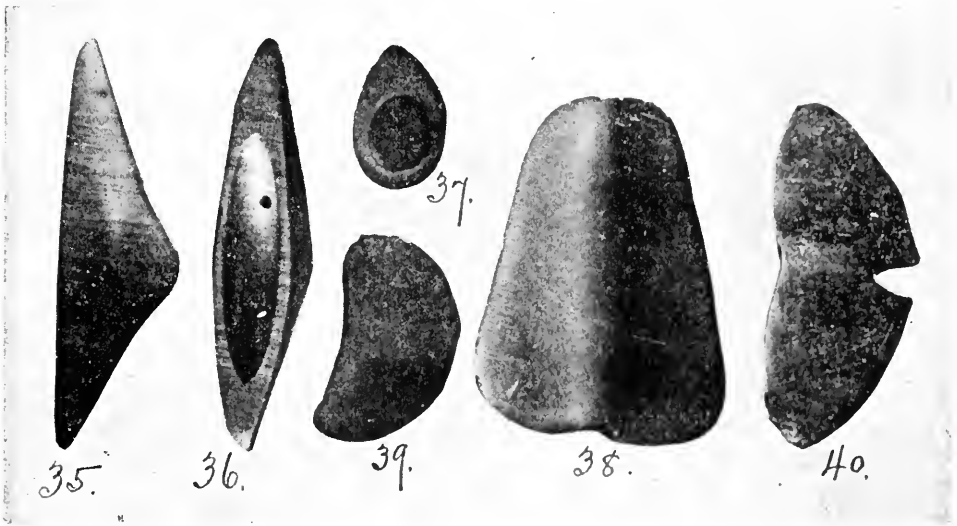


Fig. 153 Ceremonial stones. Connecticut Dr. Williams. 35 boat shaped stone of banded slate. 40 banner stone of rock crystal. All are much reduced.

most curious and interesting of the New England ceremonial stones is one which was found in New Hampshire several years ago and figured in the *American Naturalist*. It is made of siliceous sandstone of a greyish drab color. The carvings, of which there are several on the surface, are in low relief, the background being sunk below the level of the general surface. The stone is regularly egg-shaped, about four inches long and two and a half in greatest diameter. It is perforated from end to end. The carvings consist of a face on one side, a tent, or tepee, on another, a crescent, arrows

and a simple spiral figure on another, and certain emblematic figures on another. A few very fine examples of boat-stones of which 36 in Fig. 153 may be taken as a specimen, have been obtained in New England, especially in the northern part. Many of these are of forms similar to that in the figure, but others are much longer and narrower. Bird-stones are also found, though they are among the rarest forms in our collections. Fig. 154 shows one of these which is very finely made of red slate. It was found in one of the Swanton graves, as were several boat-stones. Another specimen, made of white marble was found in another grave at the same place. Pendants of various and very different forms have been found in many localities.

Fig. 154. Bird stone, Vermont. S. 1-2.

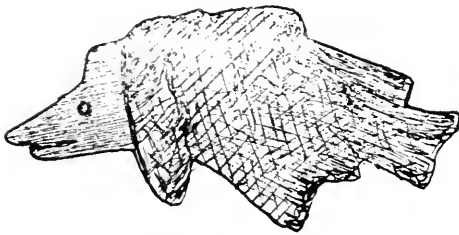


Fig. 155. Carving. Black slate. New Hartford, Conn. W. J. Mackay.

It is very likely that some of the objects, as those figured by Mr. Willoughby from the Maine graves, see Fig. 113, were used as amulets rather than as sinkers or plummets. Undoubtedly, the coarser specimens of this sort were used as weights, net sinkers, or some such thing, but it does not seem probable that those which are wrought with so great care as are some of them were made for any such use. In size these "plummets" vary from those that are only an inch or so long and weighing only an ounce or two, to those that are several inches long and that weigh several pounds. They are for the most part pear shaped or, more rarely, conical, and still more rarely, cylindrical. It may be that while some of the smaller and better finished specimens were ornaments, the larger were, as Prof. Putnam has suggested weights for stretching thread while spinning. Prof. Putnam also calls attention to the very close resemblance of the larger "plummets" to some of the smaller pestles so that, "It is impossible to draw the line between the two groups, which are so well marked by their extremes." He adds the following conclusion with which the writer fully agrees as it seems the best solution of the problem presented by these objects, "I have for

some time considered them as representing to a greater or less extent, according to size, material, shape and finish, 1st; Pestles; 2d, Sinkers; 3d, Spinning weights, 4th, Ornaments."*

American Naturalist Vol. VI, page 650.

In this connection should be mentioned certain carvings which may be regarded as amulets, totems or something of the sort. Fig. 155 shows one of these, another like this but smaller, was found near it. Prof. Putnam

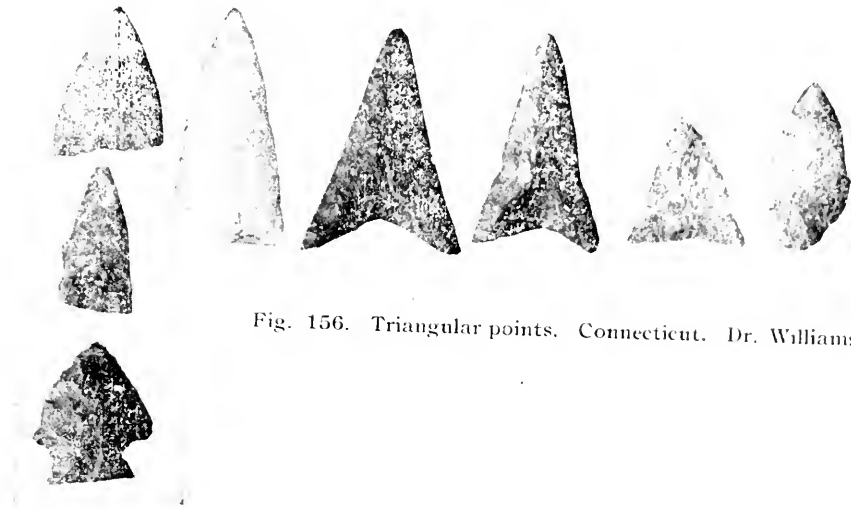


Fig. 156. Triangular points. Connecticut. Dr. Williams. S. 1-1.

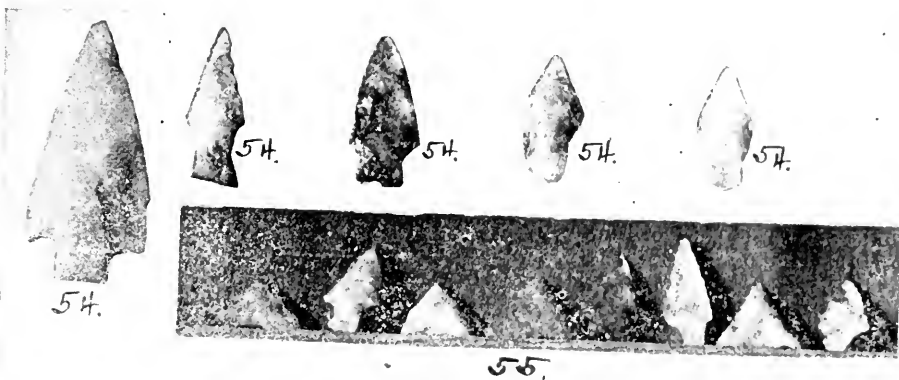


Fig. 157. Arrow-points. Connecticut. Dr. Williams. S. 1-2.

has described and figured two more elaborate specimens, one found in Ipswich, Mass., and other, which is a very fair carving of a whale, found in Seabrook N. H.*

*Abbott Primitive Industry, p. 386, Fig. 364 c 388, Fig. 365.

CHIPPED AND FLAKED IMPLEMENTS.

In New England, as in every locality in which stone implements are found, the various kinds of spear and arrow points, knives, scrapers, drills, etc., far outnumber all other objects. While the specimens of this class which are found in the Ohio and Mississippi valleys and elsewhere as a whole far excel those from New England in variety and beauty of material, they do not in variety of form nor altogether in delicacy of workmanship. It is not too much to say of our best points that they are as beautifully formed and daintily chipped as any that can be found. The main difference existing between this region and those named is in the proportion of fine specimens in any given collection. Here the very fine specimens are few as compared with the West or South, but our few best specimens are the equals of any others. The often striking similiarity



Fig 158. Points, Connecticut. Dr. Williams.

of stone implements collected in widely remote localities has been already noticed and is familiar to every student of archaeology, and nowhere does this likeness appear so clearly as in the class now under consideration. Men the world over seem to have made their chipped and flaked tools in very much the same manner and to have produced everywhere the same results. Anyone who, without going outside the somewhat restricted limits of this volume, will be at the trouble to compare the figures of points, knives, etc., given in different chapters will find ample proof of the above statement. The material used in the manufacture of these objects, varies greatly and often in localities not far separated, as for instance, in northern Vermont by far the most common points are made of a gray quartzite while those of white quartz are rare, but in southern Connecticut white quartz points are more common in some places than any others. Material varies with locality, but form does not, at least to any such extent. A striking peculiarity of the New England points is the almost entire absence of those with serrated edges. Such points are not entirely wanting here but they are very scarce. By far the most abundant form, both in points and knives, is the simple triangle, as shown in Fig. 156. This form occurs in a vast number of varieties and sizes, from the tiny arrow point half an inch long to the largest spear six or eight inches in length. Some of these tri-

angular points are very fine bits of work. No. 55 in Fig. 157 shows other triangular points, while the ruder forms of stemmed points are seen in the upper part of the same figure. Still different examples of stemmed, and in some cases, barbed points are seen in Fig. 158 and also in the two upper rows of Fig. 159. Although the forms shown in the figures are from a few localities, yet they are entirely representative of any New England collection. Because of the close resemblance between the points of this region and those from other regions, which are figured elsewhere in this volume, it has not seemed to the writer necessary to attempt to figure nearly all the many forms common to New England.

SCRAPERS.

Less abundant than the arrow and spear points are the scrapers, though they are by no means rare. They vary in size from the little nodular forms like 38 and 39 in Fig. 160 to those like 41, 42 and 35. The typical scraper was flat, or flattish on one side and more or less strongly convex on

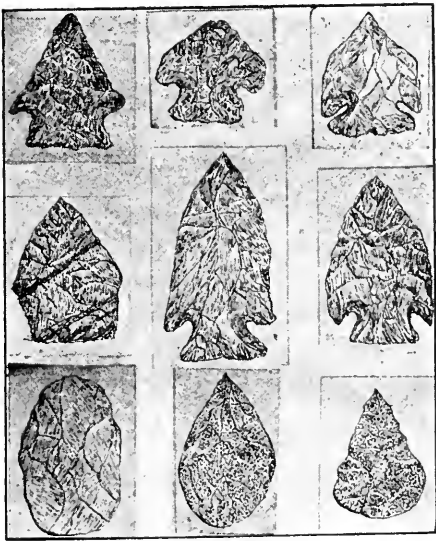


Fig. 159. Upper rows, points. Lower row scrapers. S. 1-2. Vermont.

the other, the working edge being chipped to an abrupt bevel. The specimen shown in the upper right hand corner of Fig. 161, is a sort of scraper quite common in northern New England, and there are also not infrequently found polishers of identical shape, except that in these latter the edge is rounded and worn smooth, showing that they were used in a very different manner from the scrapers.

Drills of many shapes also occur. Fig. 162 shows a few of these, but they are not of the best, for some of the drills have long slender points and are fine specimens of chipping. There have been found sparingly here and

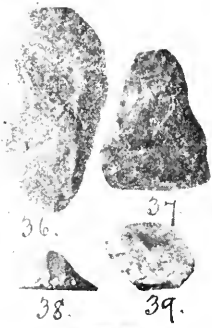
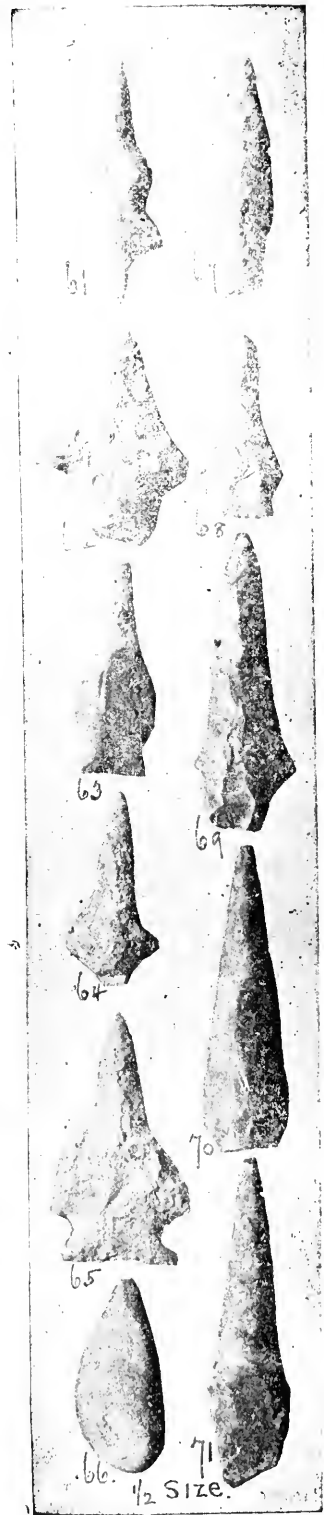


Fig. 160. Scrapers, Connecticut. Dr. Williams.

Fig. 162. Drills, Connecticut. Dr. Williams.



1/2 size.



1/2 size.

there in New England, large oval and leaf-shaped implements, some of them eight or nine inches long, which must be considered agricultural tools, spades, or hoes. There are also other very large and often clumsy specimens which perhaps should be regarded as unfinished objects. There are in the Peabody Museum some enormous specimens of this sort from Mount Kineo, Maine.

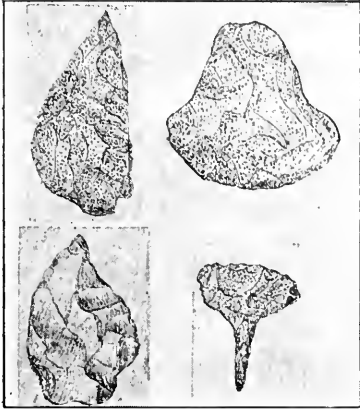


Fig. 161. Chipped specimens. Vermont. S. 1-2

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SECTION V.

THE MIDDLE SOUTH AND SOUTH APPALACHIAN REGIONS.

Lest this term be misleading it is necessary to remark that our modern geographical divisions of the United States are, in many instances, not applicable to Pre-Columbian times. The extreme South furnishes prehistoric specimens quite different from those found farther inland. While many of the forms are the same, or similar, yet the differences warrant me in describing the entire South under two sections instead of one. Florida, Georgia, Alabama, Mississippi, Louisiana, South Carolina, and parts of Arkansas and North Carolina I should consider the South proper. Tennessee, Missouri, most of Arkansas and Kentucky, and portions of West Virginia and Iowa, are to be described under my term, The Middle South. The many diversified forms or types of this important section prove that it was very extensively occupied. I much regret that I am compelled to speak of it so briefly.

Col. C. C. Jones in his "Antiquities of the Southern Indians,"* published the first work of importance. In more recent times, Gen. G. P. Thruston has issued two editions of his most valuable and interesting book, "The Antiquities of Tennessee." This deals primarily with the Middle South and is justly considered a standard work. The pottery of the region has been described at length by Prof. Holmes in his various and able papers upon ceramics, textile fabrics, etc. in the Bureau of Ethnology and Smithsonian Reports.†

*D. Appleton & Co., New York. 1873.

†Prehistoric Textile Art of the Eastern United States. Ancient Pottery of the Mississippi Valley. also Art in Shell, Prof. W. H. Holmes. Bureau of Ethnology Reports, '91-2; 82-3; etc.

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Rev. S. D. Peet, in the American Antiquarian; Prof. H. C. Mercer; Prof. Fred. Starr, of the University of Chicago, and others too numerous to mention have written upon the region. There is no lack of literature.

The Shawnees in Pre-Columbian Times. American Anthropologist, April 1891. The Cherokees in Pre-Columbian Times. Mound Explorations, Prof. Cyrus Thomas. Bureau of Ethnology Report, '90-1.

Prof. F. W. Putnam's numerous and valuable papers, reports, etc. on southern explorations, etc. will be found in the Peabody Museum publications, American Association Advancement of Science Reports, etc.

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Aboriginal Remains in Kentucky. Profs. Carr and Shaler.

Introduction to the Study of American Archaeology, Prof. Cyrus Thomas. Robt. Clarke Co., Cincinnati, 1899.

The New England types, so well described by Professor Perkins in the preceding section, are almost wanting in the Middle South. Celts or polished stone hatchets, also some forms of arrow points (especially the war point), certain of the elongated or roller pestles, etc., are quite common. But there are scores of types, or forms, to be found throughout the great valleys of the Tennessee and Cumberland, and in eastern Missouri, southern Kentucky and West Virginia totally different from anything heretofore described in this book.

MISSOURI, NORTHERN ARKANSAS AND EASTERN IOWA.

The specimens from one archaeological territory almost imperceptibly shade off into those of another. Where a river, or a lake separates sections occupied by different tribes, the contrast may be more marked. Exact boundaries can not be drawn, yet one may find the implements within ten or fifteen miles of a given point, on either side, quite different. Taking into consideration these observations it may not be amiss to state that if one drew a line from Dubuque, Iowa, to Wachita, Kansas, (a distance of some 450 miles) that line would mark the change or dividing point between the types found on the Plains and those of the Middle South. It is quite likely that certain types of Plains implements are found east or south of this line, and some of the large agricultural tools* of Missouri may have been transported beyond it. Therefore, I do not wish the line to be understood as arbitrary.

It seems to me that the section mentioned above occupied a "middle ground" between the Plains and the Middle South. Perhaps it should have been described separately. While many artifacts, etc. are like Ohio Valley forms, some indicate an influence of Plains tribes. Others are distinctively of the Middle South. Particularly is this true of the pipes, ornaments and ceremonial stones, and on that account I have described them along with Tennessee and Kentucky forms instead of under a separate heading. Many pipes and ceremonials were doubtless brought in through trade, war, etc. It is obvious that foreign materials, or art forms, were considered more valuable than the products of home manufacture. To what extent aboriginal barter affected culture, archaeologists are not prepared to say. That it had its effect, is incontestable. I shall presently show several specimens from eastern Iowa which are unquestionably of Southern origin. We of to-day import art treasures and such things as we do not manufacture at home. The aborigine had no need to secure by barter any article he could himself make. Colors, designs, forms, rarity of substance, etc. appealed to him more than the practical usefulness of an object.

Dr. J. M. Brooks, of Golden City, Mo., seems to live on the boundary of these two districts. He has sent me a long communication and I regret that it can not be reproduced in full. But I might sum up his conclusions as follows:

*Or whatever they are—perhaps not spades.

Hematite celts and cones, etc. common, grooved hematite axes, rare. Some long "roller pestles" and ordinary "bell shaped" pestles, are found. Grooved axes are not common. Celts are fairly common. A preponderance of flint implements over all other classes of artifacts. Large spades, hoes and flint celts occur.

He notices certain forms of spear or arrow heads made of blue flint exclusively; others, of white or brown flint. Kindred observations might be made by collectors in other regions. Localized study of colors, materials, and forms tells much regarding prehistoric times. "A few of their village sites can be located, and, of course, relics can be found near them with some degree of plentifulness. Some of the nicest specimens have been found in their graves, but it is rather difficult to locate burial sites.

"The polished stone implements are mostly from some form of granite (generally blue), which is not a native stone, and hematite which is native to this country.

"Beginning with the chipped flint specimens we may class them as large heavy specimens such as spades, hoes, etc., and spears, perforators, arrows and miscellaneous. Most of them might again be subdivided into stemmed and stemless. The latter exist with much more frequency than the former, (about in the ratio of 2 to 1).

"Hammer stones are pitted and unpitted. Many are oval instead of round. The material used is generally a fine grade of sandstone. They are rather plentiful.

"A few beads have been found. Some of them were banded similar to the pottery of Arizona, others were plain. Most of them were stone. Some of them are of bone and, of course, not banded. There are few pipes and of those that have been found I have been unable to examine closely or to get drawings of them. I saw one of stone shaped like an inverted pyramid."

Figs. 163 to 177 are from the collection of Chas. J. Beencks, Davenport, Iowa. These are much more nearly like the forms found throughout the Ohio Valley, and the St. Lawrence basin. I have purposely omitted such arrow points, celts, axes, pestles and other common forms which have been, or are to be, reproduced in other sections.

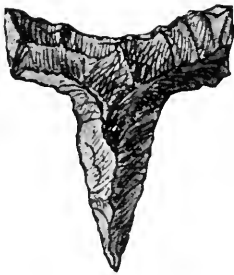


Fig. 163. This, perhaps, is a perforator made from a larger implement which was broken and then chipped to restore it to usefulness. It has an unusually broad top or base and is somewhat peculiar on that account. Blue Grass, Iowa. S. 1-1.

164, is a very common scraper. Possibly the top or head is a little longer than in most scrapers. Scott Co., Iowa. S. 1-1.



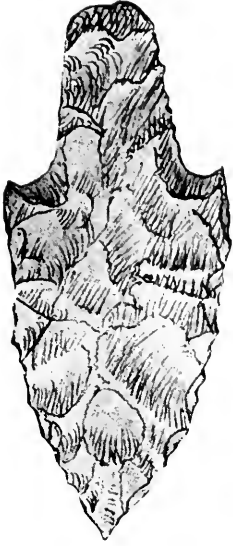


Fig. 165 is a shouldered spear-head. It might be well to remark here that there is a diversity of opinion as to where arrow-heads end and spear-heads begin. I have stated that an implement more than one and three-quarters inches in length might be classed as a spear-head. That is, a shouldered, or barbed, or lance-like implement which was, manifestly, not a knife. But a slender and thin point of 2 or 2½ inches in length might be used to tip an arrow. The weight, thickness, etc. makes a great difference. A heavy point was much more convenient as a spear-head; a light point, as an arrow-head, as any one who has practiced archery well knows. I used to experiment with one of the heavy Yew bows which were common in England and this country some fifteen years ago when archery was popular. The bow pulled about 60 pounds and the greatest range was something over 500 feet. The weight of the arrow-head made a great difference in the force, trajectory, range and all other points observed. Therefore, in establishing a line of demarkation between arrow-points and spear-heads, it is not so much the length but the size, thickness, etc., of the implement which is to be taken into consideration. Scott Co., Iowa. S. 1-1.

Fig. 166 is a peculiar lance or spear-head having a very long stem. Stemmed points are quite common, but it is seldom that the stem is so long as in this. It is an open question as to whether such a form as 166 was a lance-head or knife. S. 1-1. Gray flint, from Blue Grass, Iowa.



Fig. 167 may be either an arrow-point or spear-head, according to thickness. The shoulders, or barbs, are unusually long and squared at the ends. Scott Co., Iowa. S. 1-1.



Fig. 168 is a common form throughout the United States, east of the Great Plains. Both 167 and 168 are indented at the base. Doubtless an arrow-point. Blue Grass, Iowa. S. 1-1.

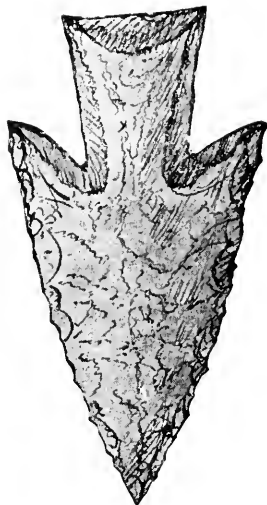


Fig. 169 has a long stem and the shoulders or barbs are pointed. This form is somewhat rare. White flint, Scott Co., Iowa. S. 1-1.

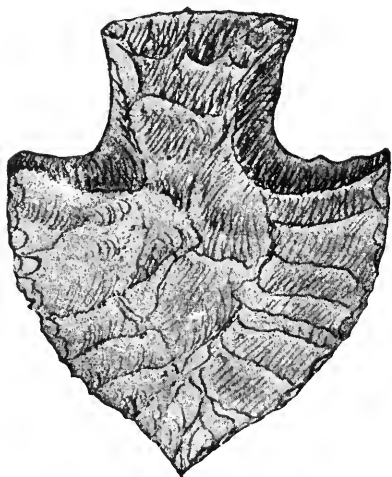
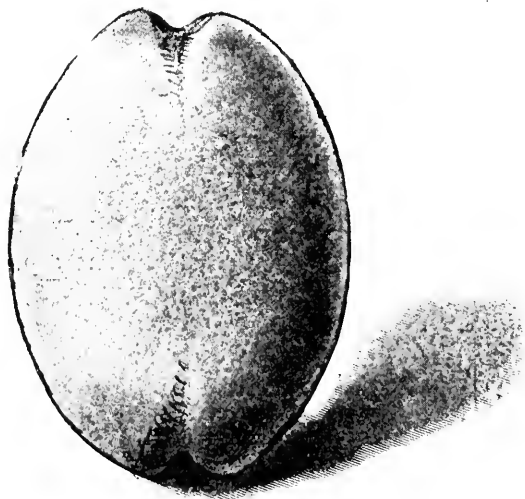


Fig. 170 is a very broad form of spear-head and from its shape I would consider that it has been chipped down from a larger implement which had been broken. However, I may be wrong in this suggestion. S.1-1.

Fig. 172 is a sinker or weight. These are not so common as in New England and the St. Lawrence basin, although they are occasionally found. This is an oval pebble, not flat as are most net sinkers. Found at Gilberton, Iowa, near Mississippi River. S. 3-4.



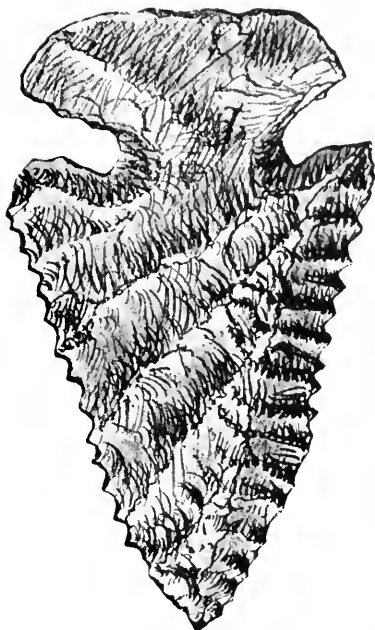
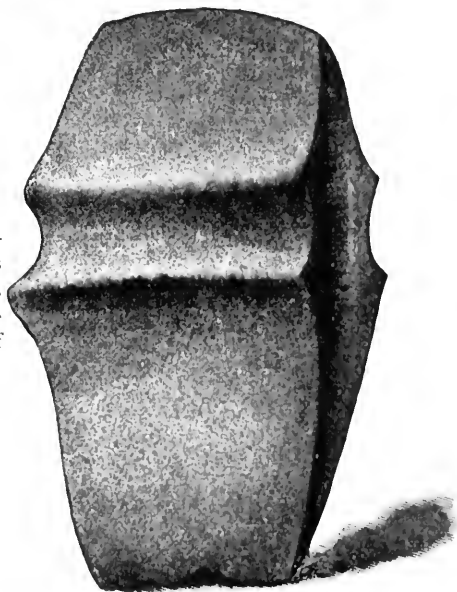


Fig. 171 is one of the rare forms of rotary and serrated spear-heads. It is beveled to the left, as most of them are. Just why flint implements like this should have been beveled, I do not know. Dr. Wilson and others affirm that the beveling does not give a rotary motion to the point when shot, but that such motion was obtained or controlled by the feathers upon the shaft. It is quite obvious that a rotary and serrated spear-head, or arrow-point, would make a larger wound than an ordinary point; and the animal would soon become exhausted from loss of blood, etc. I am of the opinion that such implements were used in hunting large game. Any one who has hunted with modern, small-calibre ammunition knows that the soft-nosed bullet is preferable to a bullet making a small, clean wound. The old style, large calibre ammunition will speedily bring down almost any big game; whereas, the same animal will run a long distance after having been shot by a high velocity, small-caliber bullet. A bow is not as effective as a rifle and as the prehistoric tribes were dependent upon their bows and arrows, to a great extent, they naturally employed projectiles which would bring about the greatest possible execution.

This must be taken into consideration when studying flint implements. S. 1-1. Blue flint, Scott Co., Iowa.

Fig. 173 is a grooved axe of very fine workmanship found near Valley City, Iowa. It is of green stone and weighs $6\frac{1}{2}$ pounds. This is an excellent representative of the better grade of axes found in the North-western portion of the Middle South. The back is curved. S. 1-2.



AXES, PESTLES, CELTS, ETC.

The pestles of Missouri, Iowa, Kentucky, etc. are similar to Ohio Valley forms. They are more numerous than grooved axes. The celts are hardly typical of the Middle South, but more like northern ones. Axes are equally divided between "all round grooved" and "flat backed." But in most Tennessee, Arkansas and southern Kentucky specimens the groove extends entirely around.



Fig. 174 is a long, slender axe of another form, found at Blue Grass, Iowa. It has a groove extending entirely around it. This form is common in the Middle South. S. 1-2.

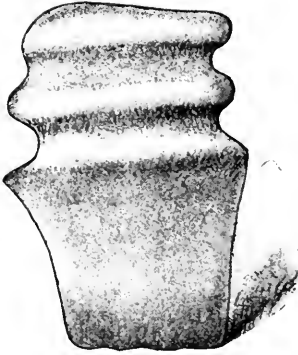


Fig. 175 is an axe having two grooves. This is an exceedingly rare specimen and I have seen only three or four in the entire United States like it. S. 1-2.

HEMATITES.

Hematites are more numerous in Missouri than elsewhere. They are also common in Kentucky and Eastern Iowa. I described them (over the name of my museum assistant) in January '97 * and can do no better than quote the description here.



Fig. 176 is a small hematite celt, well made, and common throughout the entire Ohio Valley and Middle South. Found in Scott Co., Iowa. S. 1-1.

*American Archaeologist, Vol. I. pg. 11.

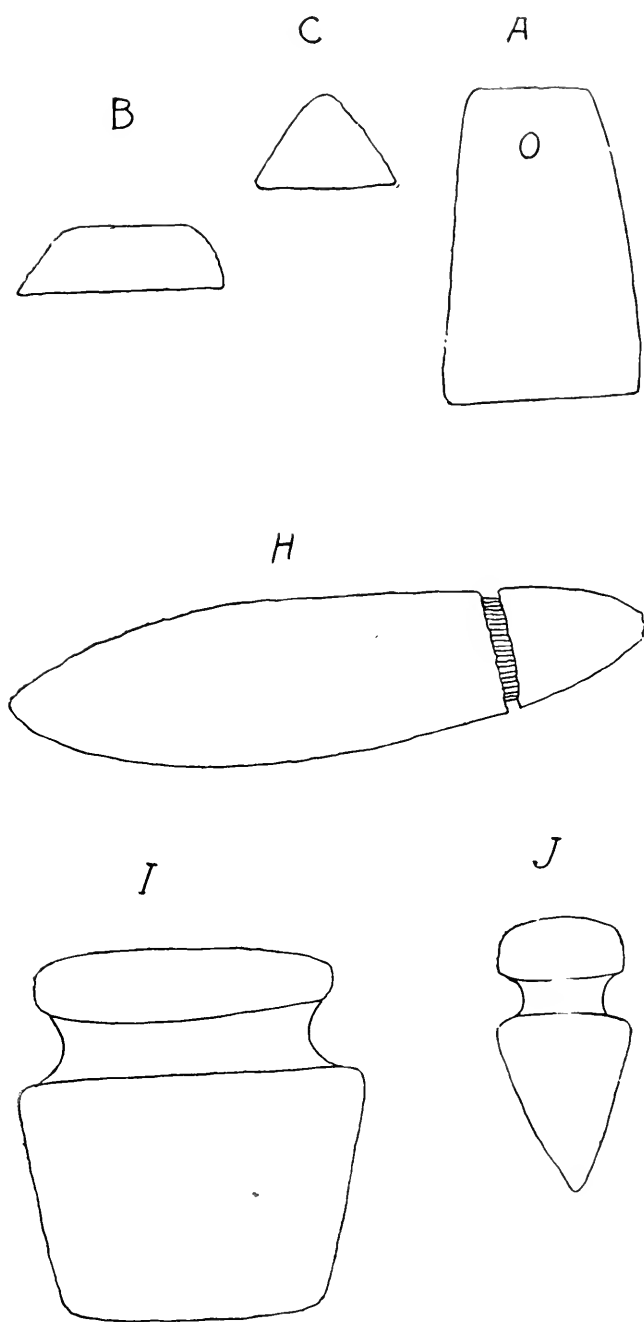
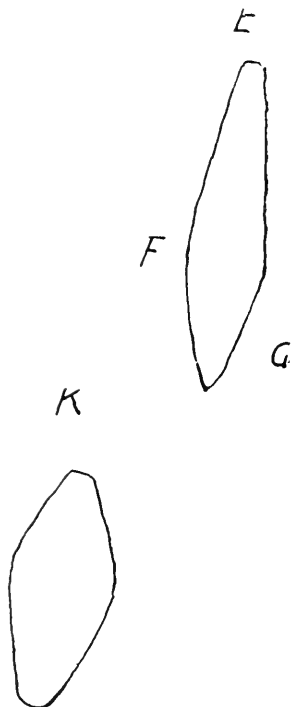


Fig. 177. Hematite Objects from Ohio, W. Va. and Mo.

Naturally, hematites divide themselves (on form) into eight classes:
 The celt, for cutting, scraping and smoothing.
 The axe (grooved) for hewing and cutting, pounding, etc.
 The cone, use unknown; probably ceremonial.
 The plummet, use unknown, probably ceremonial.
 The egg-shaped, use unknown; probably ceremonial.
 The egg-shaped, with flattened base, use unknown, probably ceremonial.
 The perforated ornament for suspension.
 The paint stone, for painting.*



A, B, C, and J, are half size. I is one of the finest and largest hematite axes I have seen. All these specimens are in the Ohio State Archaeological and Historical Society and the State University Collections at Columbus.

Not a few rough hematite axes are found, but polished ones are rare. I have seen several of the same forms as A, in Fig. 43. In the center of Fig. 6, (Mr. Barnes' collection) between F, and E, are small, short, stone axes. Some hematite axes are very like them in form. The largest I ever saw was 9 by 5 inches. The smallest, 2 by 1 inches.

Fig. 178.

In Fig. 177, A represents an ornament from Missouri. It is one-third of an inch thick. Ornaments are very rarely made of hematite. B shows the typical flattened cone from Ohio or West Virginia; C is the cone form and is often found in the hematite belt; E (Fig. 178,) is a side view of a celt; the face is rounded (F), and the back (G) is sharply beveled off near the edge. This type is somewhat unusual and is found mostly in the Ohio

*Notes on Ohio Archaeology, by Gerard Fowke, Page 37.

"Hematite was sometimes chipped into form, but usually ground, the powder being used for paint."

and Missouri Valleys; H is a fine plummet, shown full size; a beautiful and graceful relie. No archaeologist can justly classify such a work of art (made of exceedingly hard material) as a mere net sinker. I is an axe from Missouri and is two and one-half times larger than the illustration; J is a side view of the same. The natives were able to manufacture tools, etc., of considerable size, for surface hematite occurs in large fragments. They do not occur in other parts of the country, save where brought from a distance. K, (Fig. 178,) shows the common form of ungrooved plummet or egg-shaped pattern.

As to the small celts, Mr. Fowke observes:

"These implements were probably used as knives or scrapers, being set into the end of a piece of antler, which may in turn have been set into a larger handle of wood. That some were knives is shown by the edge, which is dulled to a flat, polished surface, extending from side to side; and that many were scrapers is shown by their celt-scraper shape, a half-elliptical section, or by the scraper form edge. * * * Some, however, have the edge symmetrical, as in the hatchet-celts."†

General G. P. Thurston says‡ (referring to cones and plummets): "They are too exact in form, and well finished, and most of them are too pointed for practical use as mullers. They also show no evidence of abrasion or grinding at the apices or points. The round top specimens are rare,§ and show no signs of rubbing."

TENNESSEE, ARKANSAS, MISSOURI, ETC., POTTERY,

This region is famous for the great perfection attained in ceramic art. Its pottery is only excelled by that of the Cliff and Pueblo people of the Southwest; and thousands upon thousands of the various jars, bowls, urns, bottles, effigies, idols, etc. have been taken from its mounds and graves and are to be found in all the museums and many of the private collections of this country and Europe. I have referred to the various authorities upon pottery and need not enter into a lengthy description of the varieties here, but I will present figures of most types.

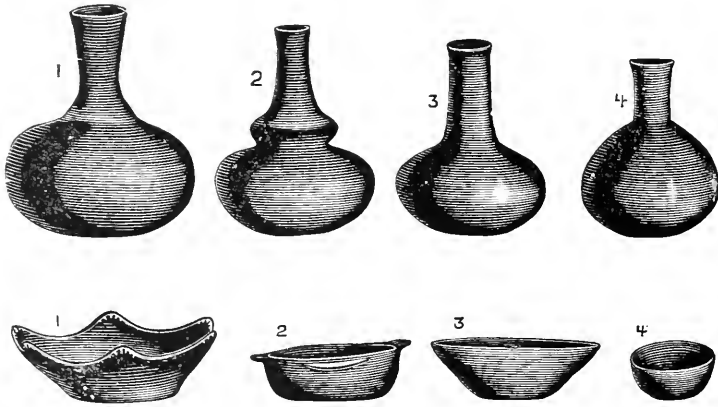
Those not acquainted with the pottery of the Ohio Valley and Middle South should bear in mind that it does not materially change until the mouth of the Wabash River, in southern Indiana, is reached. That is, descending the Ohio from Pittsburg and visiting all tributary streams, an archaeologist would find no southern forms until he arrived at the Wabash. A large cemetery was opened at the mouth of that river by my field assistant in the fall of '98 and several hundred specimens almost identical with those of Arkansas and Missouri were taken from the graves. To a certain extent, southern Illinois should be classed with the Middle South, for its agricultural implements and pottery are quite similar to Tennessee, Arkansas, and Missouri forms. But the interior of that state does not seem to have been inhabited by tribes skilled in the manufacture of pottery, effigy pipes, discoidals, engraved shells, and other objects common further

†Bureau Ethnology Report; 1891-2. Page 87.

‡Antiquities of Tennessee, Page 289.

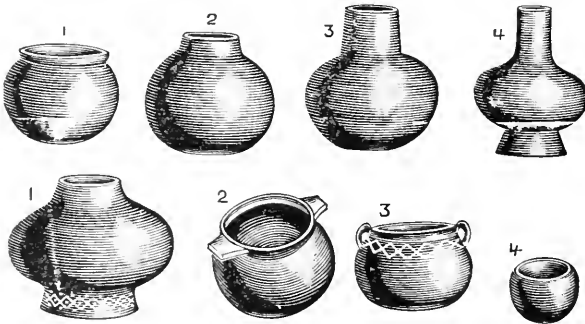
§He means rare in the South.

down the Mississippi or up the Tennessee and Cumberland. There are individual exceptions to this statement, but I am taking into consideration the general trend of archaeological testimony and my conclusions are not



Society, for several of these figures. S. 1-5

No. 1, is a plain bottle, the neck gracefully curved where it joins the body. No. 2, is of a more complicated design. No. 3, is a plain bottle with a long, narrow neck. No. 4, is an ordinary bottle with high body and short neck. In the second row; No. 1, a scalloped dish, somewhat rare; No. 2, plain dish with broad base; No. 3, a graceful dish having a narrow base, and No. 4, a round dish or small bowl.



No. 2 has two little projections or ears which served as handles. No. 3 is decorated and provided with handles. S. 1-5.

Fig. 181. Effigy pottery, consisting of plain bowls and bottles surmounted by effigy heads. There is no attempt made at showing more than the head of the bird, animal or human. This class of pottery is very common in the Middle South. S. 1-5.

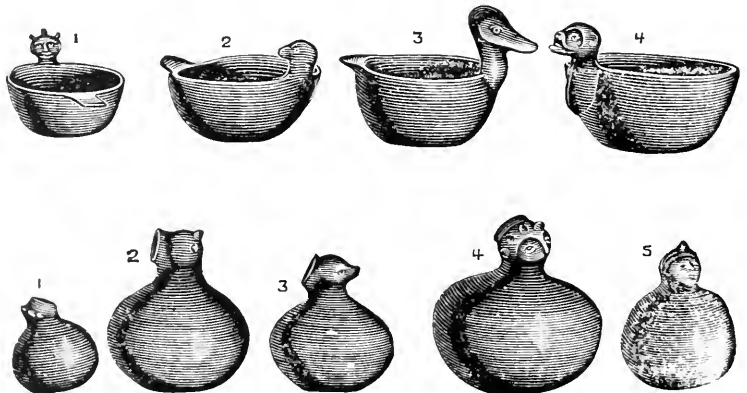


Fig. 179 shows 8 typical plain bottles and dishes from mounds in Missouri and Arkansas. There is an endless variety of the bottle form. Professor Holmes presented a classification of them, and his grouping does not greatly differ from my Figs. 179-180-1. I am indebted to Mr. W. J. Seever, Curator of the Missouri Historical

Fig. 180. No. 1 is a plain jar of common form, having a short neck and large body, No. 3, is a type between the jar form and the bottle proper. No. 4 is a bottle having a specially made base. This vase is common to the region and will compare favorably with early Etruscan pottery. In the lower row Nos. 1, 2, 3, and 4 show various forms of bowls. No. 2

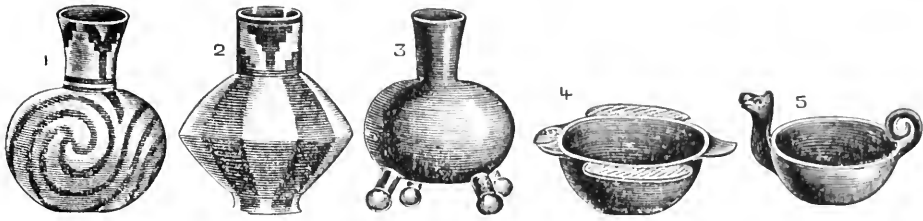


Fig. 182, presents 5 interesting vessels. No. 1 is a well made bottle or small jar decorated with painted spiral lines around the body and has a peculiar decoration upon its neck. Usually, the painting is in red. Sometimes the entire vessel is of red clay; but more frequently they are of a dark gray, brown or light gray. The red jars and bowls are highly prized among collectors. No. 2 is also painted. Doubtless the decorations on these had some ceremonial significance. No. 3 is a tripod jar. No. 4, a fish. No. 5, a bowl surmounted by a deer's head on the one side, whereas the animal's curled tail forms a handle on the opposite side. S. 1-5.

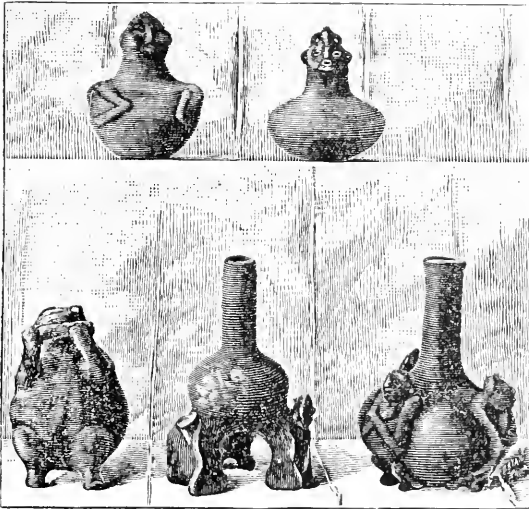


Fig. 183 Mound pottery from Mr. Thos. Beckwith's collection, Charleston, Mo. Found in southern Missouri near the Mississippi River. The New Madrid region is famous—thousands of vessels are taken from its mounds.

No. 1. A red bottle resting upon the backs of 3 kneeling human figures. Two heads were missing when it was found. Effigies $37\frac{7}{8}$ inches high; entire vessel, 9 inches high.

No. 2. A red bottle resting upon 3 human figures in a squatting position. Their arms are crossed. Effigies, 5 inches high; entire vessel, $9\frac{1}{4}$ inches high.

No. 3. A peculiar human-headed bottle. The projection and perforations at the top doubtless indicate method of hair-dressing, or a certain head gear.

No. 4. A bear standing upon its hind legs with a bone in its mouth.

No. 5. A jug with the outlines of a frog upon it, but surmounted by a human face. S. about 1-7.

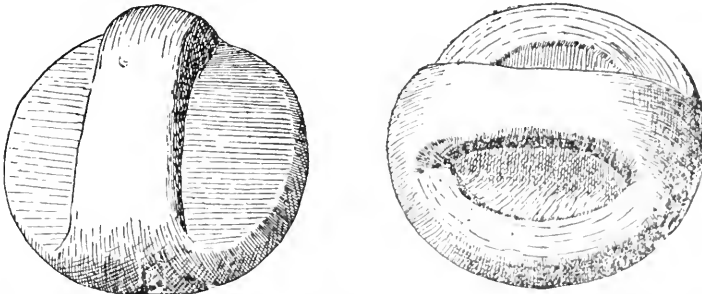


Fig. 184 shows 2 of the hand tools used in smoothing the clay preparatory to making vessels. I am indebted to Gen. Gates P. Thruston and the Robert Clarke Company, of Cincinnati, Ohio, for permission to

use some 25 illustrations from his splendid work, *The Antiquities of Tennessee*.

General Thruston calls them "plastering trowels" and gives as proof: "Upon examining these trowels closely, we find a thin film of smooth, hard-pressed, red clay adhering to the original hard-burned pottery surfaces of some of them, which offers additional evidence of their use as plastering trowels." *Antiquities of Tenn.*, pg. 163. S. 2-5.

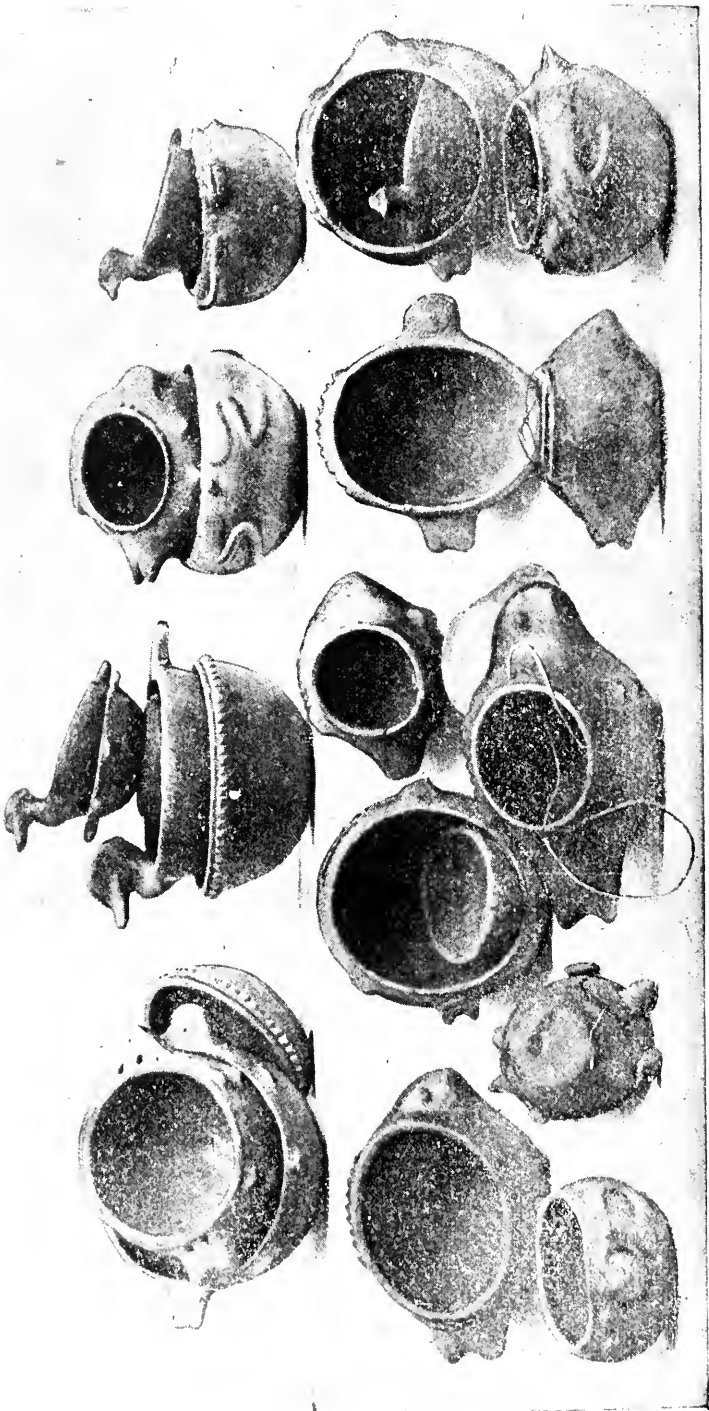


Fig. 185. S. 1-4.

Fig. 185. Pottery from a cemetery of stone graves near Nashville. General Thruston's collection, Tennessee, (kindness of Gen. Thruston) Frog, sun-fish, duck bowls with decorated rims.

"These were familiar models of the old pottery makers, especially the sun-fish and the frog. The latter were favorite family names or emblems of the southern tribes. * * *"

"The uniform thinness and regularity of the walls, the careful burning, the exactness of outlines and the glossy finish of some of these vessels show considerable artistic skill."—Thruston, pg. 149.



Fig 186 The left-hand specimen is an elligy bottle, the mouth being enlarged for the opening. In most of these the mouth of the bottle is in the back of the head. The right-hand specimen is a very large and grotesque bowl representing the human figure. This form is quite rare for it portrays an abnormally fat person lying

on his back. The legs are short and pig-like. The bottle-shaped effigies frequently show fat persons in a kneeling position. The former is in the collection of the Ohio State University, the latter is in the possession of the Smithsonian Institution. S. 1-3.



Fig. 187. Two idols or effigies from south-western Missouri. The one to the left is rather rude but the head of the smaller specimen is exceedingly well modeled. Both of these are in the possession of the Ohio State University. S. 1-3. Figs. 186-7 were originally in my collection.

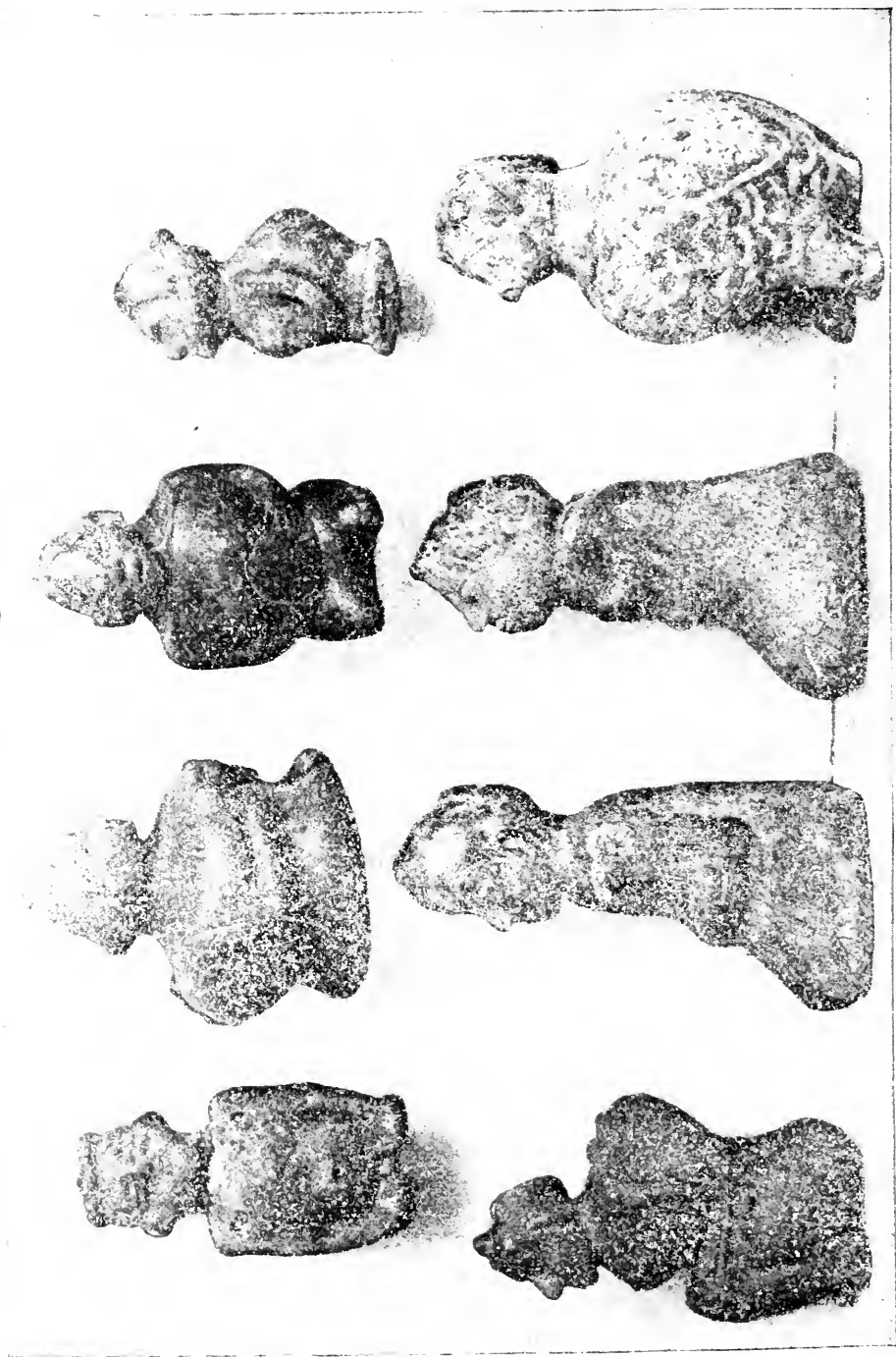


Fig. 188, S. 1-3.

Fig. 188. Clay Idols from Tenn. stone graves, Gen. Thruston's collection.

The owl form (to the right, lower row) is rare. The red paint upon it is yet comparatively bright. Most of the light colored clay idols were painted, but the designs are now very faint.

Some are hunch-backs. The hump is large and uniform, but as General Thruston says, while it may have had some significance yet, "we have not been able to discover it." I would suggest that they represent women carrying burdens.

swayed by the presence of a few foreign implements or utensils. By way of example; obsidian has been found in Ohio mounds, yet we do not conclude that all of the Ohio tribes used obsidian.

The prehistoric peoples in the northern part of the Middle South seem to have confined themselves to the large rivers. In southern Missouri and northern Arkansas their pottery is found frequently along the bayous of the Mississippi.

Steatite, or soapstone dishes, bowls, etc., are sometimes found. But being more common in the extreme South, or along the Atlantic coast, a description of them will be deferred.

BONE AND SHELL OBJECTS.

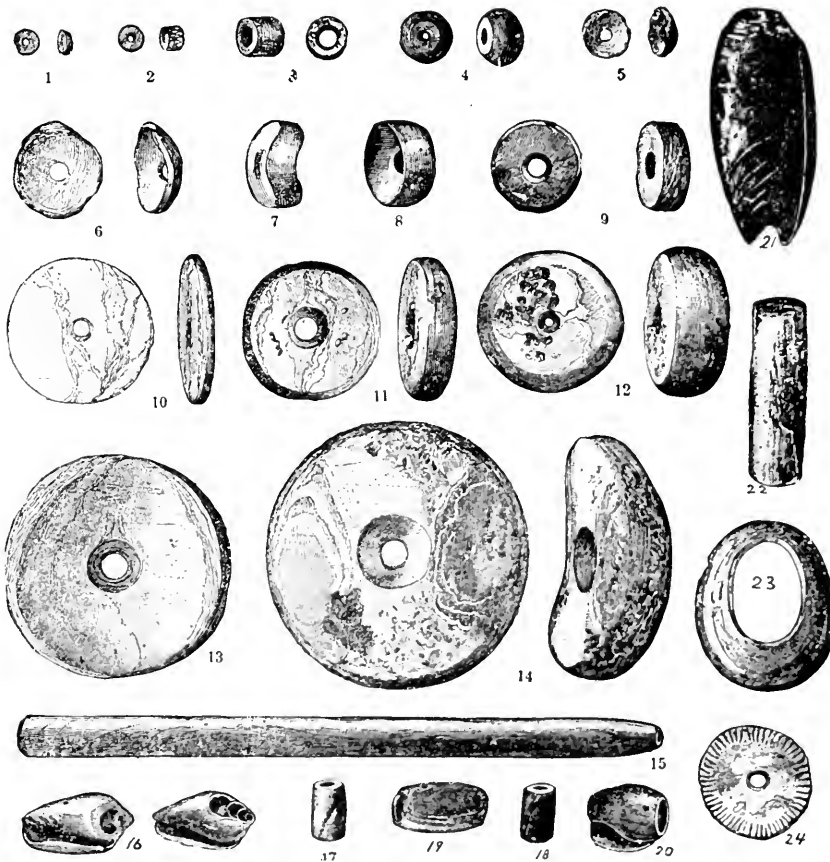


Fig. 189 shows 24 shell beads or small ornaments from various portions of the United States. Although most of them are not from the South or Middle South, I have introduced

them in this section. The illustration (a composite made up of several figures) is taken from *Art in Shell of the Ancient Americans*, by Professor Holmes. Bureau of Ethnology Report, '81.

- No. 1. Mound, Lick Creek, Tenn. Common from the Mississippi to the Hudson.
- No. 2. Santa Cruz Island, Cal.
- No. 3. Mound, Prairie Du Chien, Wis.
- No. 4, 9. Mound, Sevierville, Tenn.
- No. 5, 6. Cal., N. Mex.
- No. 7. Grave, Lynn, Mass.
- No. 8. Northwest Coast.
- No. 10. Mound, Southern Ills.
- No. 11 to 15. Mounds, Tenn.
- No. 15. Maryland.
- No. 16, 20. From various localities.
- No. 21. Mound, Cocke Co., Tenn.
- No. 22. Pacific Coast.
- No. 23. Arizona.
- No. 24. A fossil used as a bead.

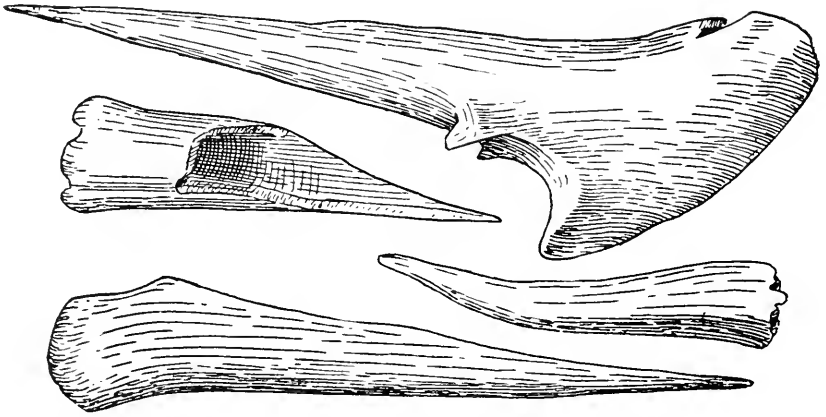


Fig. 190 shows 4 typical bone awls or perforators, from various graves and village sites in Tennessee. These are common everywhere throughout the East and South. S. 2-5.

Fig. 5 (pg. 21) is an exhibit of various shell, bone and clay, ornaments and utensils from Tennessee mounds or graves (Barnes' Collection).

- a*, is a typical cooking bowl, 4 handles.
- b*, a small bowl; the bottom is pointed instead of being rounded.
- c*, an artificially shaped human-cranium. (Some of our tribes compressed the skulls of infants).
- d*, an engraved shell.
- e*, an engraved shell or mask with perforations.
- f*, a string of large bone beads.
- g*, a very finely carved shell.
- h*, a clay ladle. A long bone awl is near it.
- i*, a long string of small beads.
- j-d*, shell. A long bone awl, a pipe, 3 engraved shells and 2 shell pins. These latter are common in the Middle South and were hair-pins.
- k-c*, shell. Some interesting pottery of rather odd form. At *k*, double bowl.

Very large shell beads are hung in strings. Ohio Valley and St. Lawrence beads are not like these.

These engraved shells are occasionally found in the stone graves and the mounds of the South, but so far as I am aware have never been found North. I will show several carvings on shells from the Ohio valley in a future section, but they are not to be compared with the engraved gorgets of the South.*

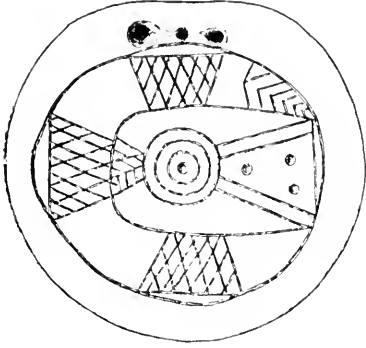


Fig. 191. From a mound on William's Island, Tennessee River, Hamilton Co., Tenn. Found near the skull. Professor Emery's Collection, Crawfordsville, Ind. 1-2.

Fig. 192. From a mound on the Tennessee River, James Co., Tenn. Found on the ribs of a skeleton. Prof. Emery's Col. S. 1-2.

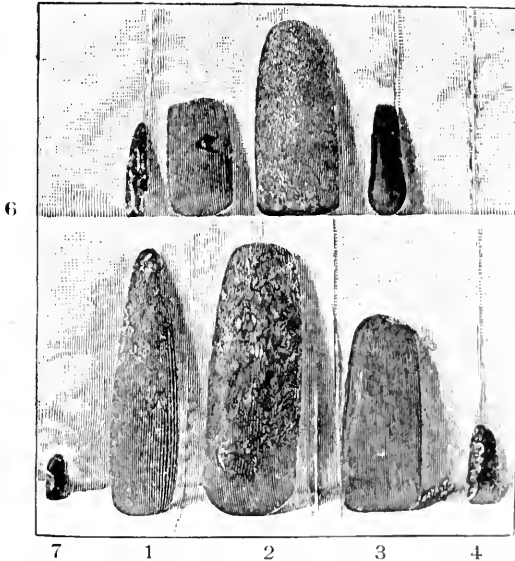
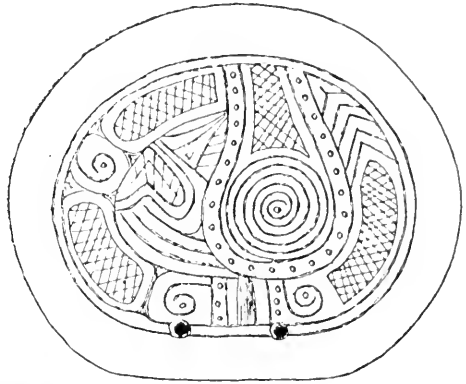


Fig. 193 presents 9 celts or polished stone hatchets from Mr. Beckwith's collection, southern Mo. Mr. Beckwith's group will stand for the Middle South. No. 1 is a very fine specimen and highly polished; it is 11 1-8 inches long. No. 5 is one of those rounded, graceful southern forms of celt seldom seen North. Of rather soft material. No. 2, Greenstone axe, 2 3-8 inches thick, 4, 3 8 inches broad and 12 inches long. The upper part of this axe is roughened so that it can be securely gripped or fastened. Materials, mostly granite; black or green. S. About 1-8.

*Professor Frederick Starr, General Thruston, Professor Holmes and others figure and describe many engraved shells.

AXES AND POLISHED STONE HATCHETS.

These are common and are not so very different from eastern or northern forms.

Axes from the Middle South are shown in Fig 6 (pg. 22) of Mr. Barnes' collection.

A is a very common, broad-bladed axe. Two specimens of a long, narrow form are shown on either side. Between *b* and *f* there is a peculiar axe grooved in the center but rather battered at each end. Another one, sharp at either end and grooved in the center, is observed at *d*; *c*, *e*, and *f* are typical rollers or elongated pestles, common throughout the entire South and the Ohio Valley. An inspection of Fig. 6 will show readers that most of the axes of the Middle South have a groove extending three-fourths or four-fifths the way around. Their backs are flat, in order that wedges may be inserted and the axe head thus securely held. These distinctions, offered from time to time, may be a little monotonous, but collectors should note all of them as they mark the differences between the implements of one section and those of another.

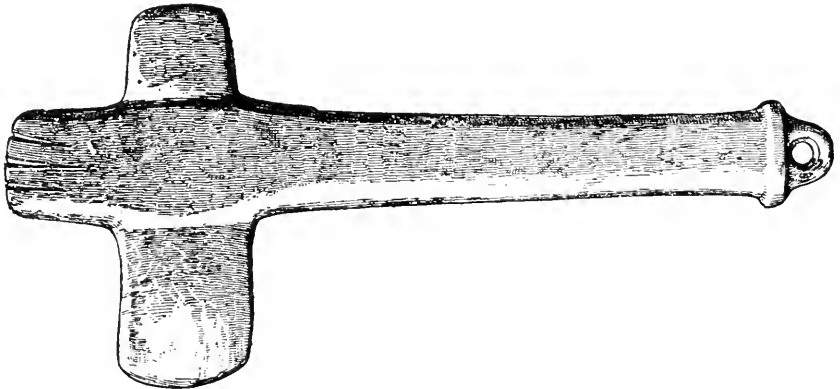


Fig. 194. S. 1-3.

General Thruston* figures a very remarkable relic—a hatchet and handle in stone, complete. But three like it have been previously found. Apparently, the workman selected a long, water worn boulder of the desired shape and gradually pecked, ground and polished until he reduced it to this form. Length $13\frac{1}{2}$ inches. Blade, over 6 inches long and double-edged. Found by Dr. Joseph Jones in a large mound, bank of Cumberland river, opposite Nashville.

FLINT WEAPONS AND IMPLEMENTS.

In Northern Indian Territory, and also in Arkansas, are extensive flint quarries. Material from these was transported throughout the Middle South. The stone was capable of being worked into large implements and in that respect differed from the Flint Ridge (Ohio) stone. These remarkable sites have been fully described.†

*Antiquities of Tennessee, pg. 259.

†An Ancient Quarry in Indian Territory.

Bureau of Ethnology Report, '94.

American Anthropologist, '91, pg. 313, (Holmes.)

Dr. George A. Dorsey has visited the sites for the Field Columbian Museum.

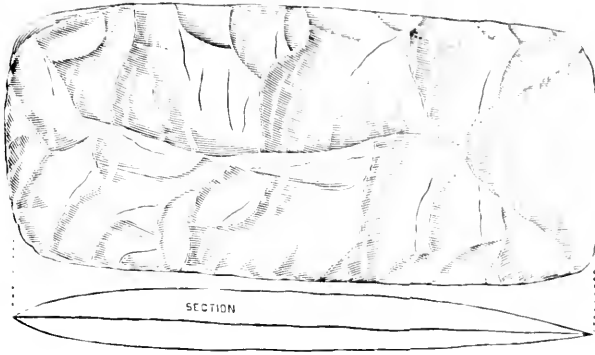


Fig. 195 presents a typical flint celt from Missouri. This type is more common in the western part of the Middle South than in the North or extreme South. They are of all sizes, forms, degrees of workmanship, etc.

Ordinary spears-arrows-knives of the whole Middle South do not vary greatly, and it is not necessary to describe those of Missouri as different from the Tennessee or West Virginia forms.

The leaf, triangular, lozenge, rotary, serrated, barbed, shouldered, etc. of Dr. Wilson's classification occur in numbers.

The materials are local cherts, flint, quartz, argillite, slate, jasper, etc. Nodule flint (not quarry) was largely used in Tennessee and Kentucky. In the latter state Flint Ridge (Ohio) materials abound; also, in West Virginia. But it is rare in Tennessee and Missouri and very rare in Arkansas.



Fig. 196. S. 1-1.

Fig. 196. Common arrow-point.

Fig. 197. Shouldered arrow-point. More of these are found in the Middle South than North or East. I am indebted to Mr. B. Lillard, publisher of Popular Science, for the loan of these and other cuts.



Fig. 197 S. 1-1

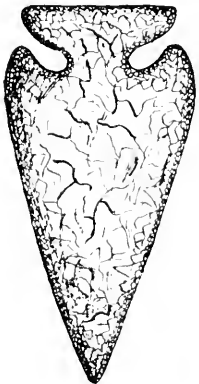


Fig. 198. Straight base, shouldered and well barbed. Not so common as Fig. 197. This form is found in both arrow and spear-heads. It is frequently rotary and sometimes serrated. S. 1-1.

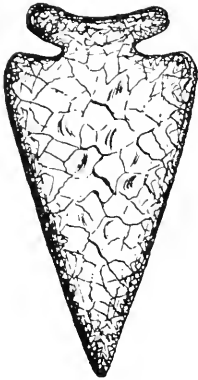


Fig. 199 Barbed, and slightly indented at base. Fairly common form of point for either arrows or spears. S. 1-1.

Drills, perforators (or hair-pins) are to be more fully described under the Ohio Valley section. They are common throughout the Middle South and some very fine specimens are found.



Fig. 200.



Fig. 202 right. I am of Dr. Steiner's opinion that the very S. 1-1. long, slender ones were hair-pins. Would aborigines use a delicate 4 or 6 inch drill, wrought from hard material after hours of patient toil, when a common reed, or a hard stick,

Fig. 201, S. 1-1. or a roughly chipped perforator would serve the same purpose?

Fig. 204.

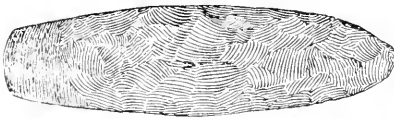


Fig. 205.

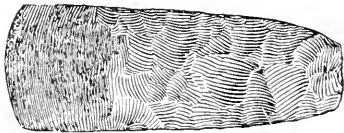


Fig. 206. S. 1-1.

The chisel-like forms shown in Figs. 204-5-6 are typical. A few like them are found in Illinois and Missouri but they are mostly confined to the mounds and graves containing pottery. They are usually well polished and exhibit evidences of long and continued use.

A Pre-Columbian Indian Flint Implement.

FOUND IN UNION COUNTY, ILLINOIS, JULY, 1899.

BY DR. H. M. WHEELER, ST. LOUIS, MO.

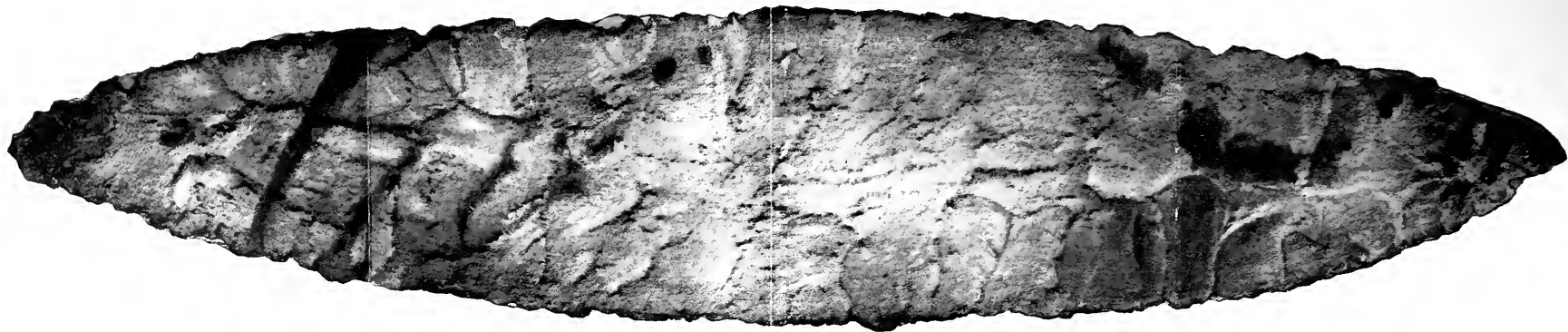


Fig. 203. S. 11.

Material, flint, color, brown, with reddish-brown spots and stripes, length, 20 in. h. s., width, 4 inches, thickness at center, 1 inch, weight, 43 avoirdupois ounces. This large pre-Columbian piece of hand-worked flint must be seen to be fully appreciated. It gracefully tapers in all directions from the center to the thin cutting edge. The rich, natural brown color is artistically sprinkled with light specks and various sized reddish-brown spots and stripes. This gives the implement a beautiful appearance unequalled by any other large piece of flint I have ever seen. In this respect, each one seems more beautiful than the other and grows on one like a fine picture. The thin ends and edges are quite translucent. One side is slightly more convex than the other, and the entire has a graceful curve which suggests the type of so-called rotary arrows and spears. The piece shows no evidence of having been worn by use. The thin (1/3-1/6 inch) portion of the edge, for about 1 1/4 inches near one end, is a peculiarity noticed in other large flint pieces.

Fig. 203 is a magnificent flint spade or ceremonial implement some 20 inches in length. I am indebted to Dr. W. H. Whelpley, of St. Louis, who kindly prepared a plate for insertion in *Prehistoric Implements* showing the specimen full size. This is one of the largest flint implements in existence, being excelled by only a score of the very finely chipped objects of extraordinary length in the possession of the Missouri Historical Society,* the Tenn. Historical Society, and one or two eastern museums.

Mr. W. J. Seever, Curator for the society, reports that 47 implements were discovered in a grave near Waverly, Humphreys Co., Tennessee. The lengths of the largest are as follows: 27½, 22, 21¼, 19, 19, 18½, 18¾, 18¼, 18¼ (inches), etc. No such discovery of magnificent flint ceremonials has been made in the history of American archaeology. The collection is on exhibition in St. Louis and is well worth a trip of considerable distance to see it.

LARGE FLINT IMPLEMENTS

Fig. 207.



Fig. 208.

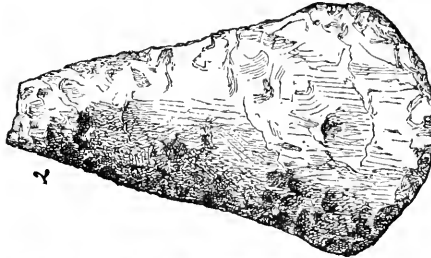


Fig. 207, a notched hoe.

Fig. 208, a spade with a broad blade and narrow top. It is not very rare, yet hardly common.

Fig. 209, an oval spade, of the more common form. Fig. 210, shows some Wampum beads.

All are in the Missouri Historical Society Collection, and are of comparatively frequent occurrence in the Middle South.

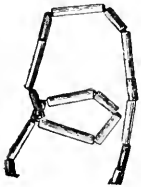


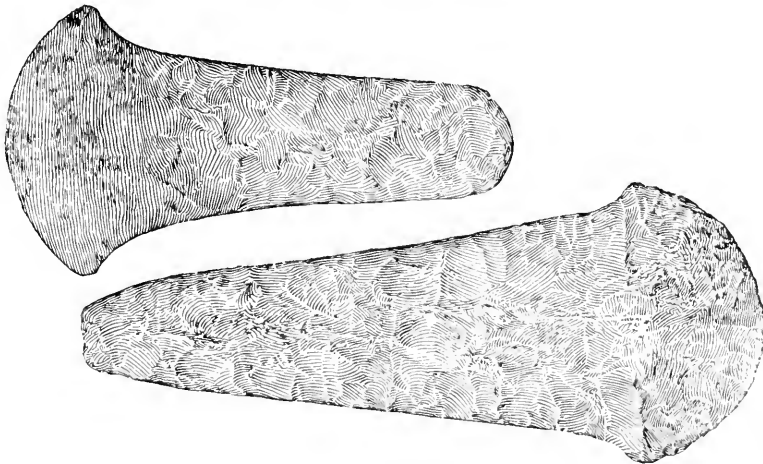
Fig. 210.

S. 1-5.

Fig. 209.



I am indebted to Mr. Seever for the loan of this and several other cuts.



Figs. 211 and 212. S. 1-4.

Figs. 211-2. Two very beautiful spades or agricultural implements. These are more delicately chipped and of rarer forms than Figs. 207-8-9. S. 1-4.

*American Archaeologist, Vol. 1, pg. 143.

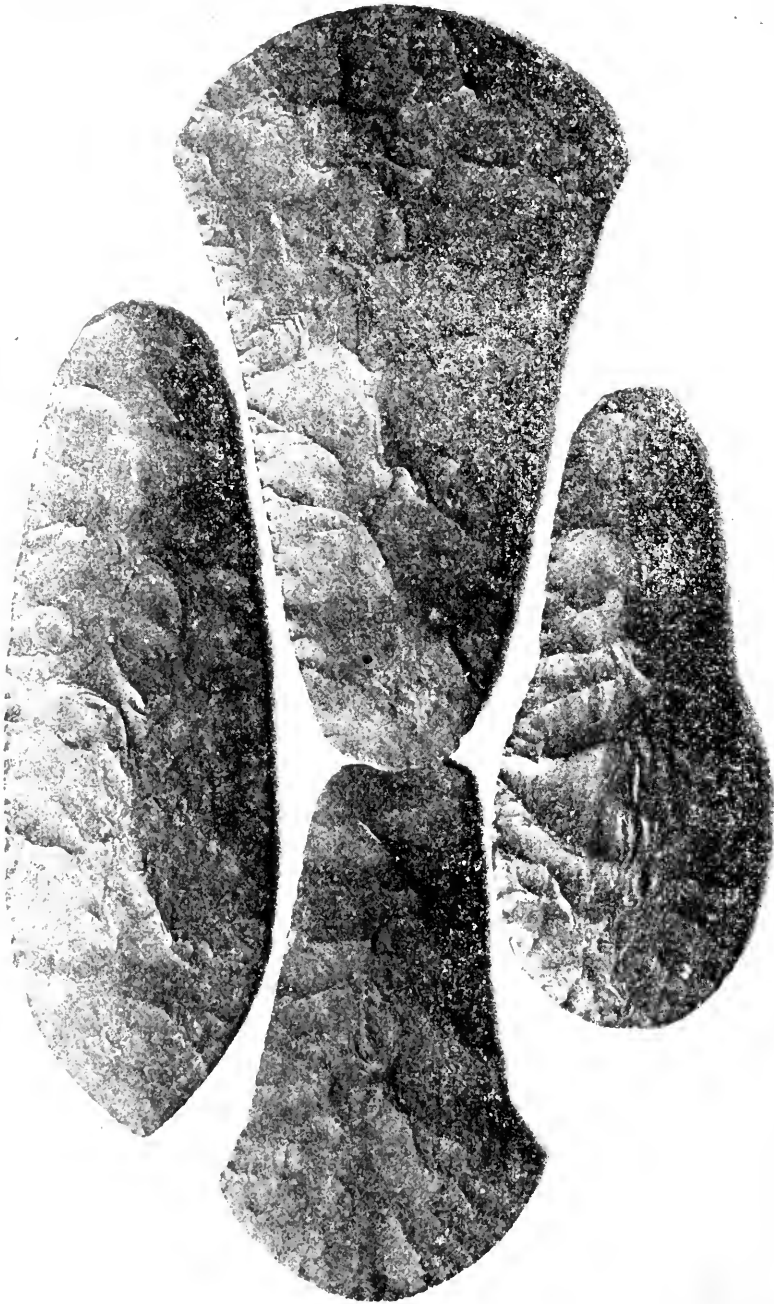


Fig. 214. S., about 2-9.

Fig. 214. Here are presented 4 as fine spades as have been found in the Middle South. Although the implements are very large the surfaces show that small flakes have been detached. I have seen ordinary spear-heads or knives upon which the "flint chipper" had expended far less skill and patience. They are in General Thruston's collection. I am indebted to him for the loan of this and other figures. From Tenn.; S., about 2-7. The leaf-shaped one, 14 inches long; the fan-shaped, 12½ inches long.

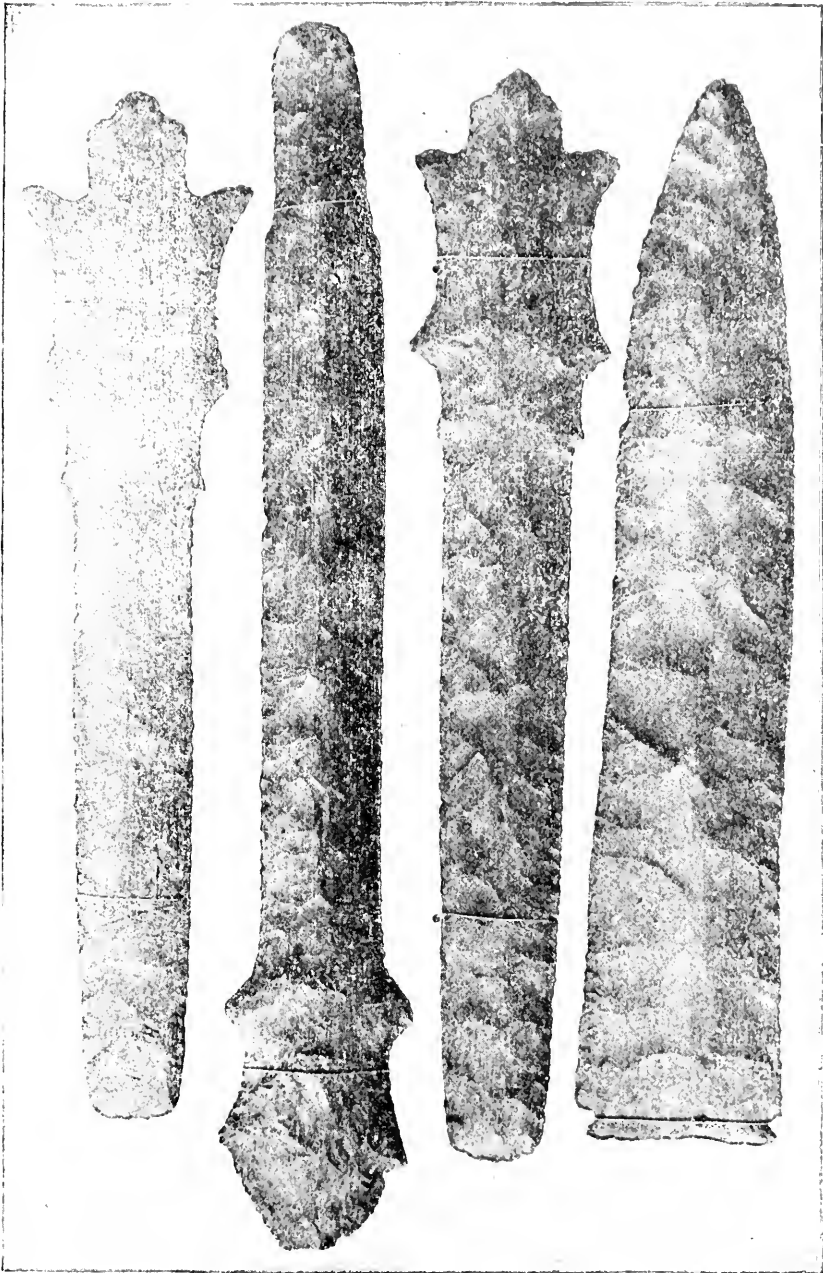


Fig. 215. S. 1 2

Figs. 215-6-7-8. Show different forms of "flint ceremonials." With the exception of Gen. Thruston, the authorities say but very little about them. In truth, no one knows regarding their use or purpose. From Tenn. Remarkably well made.

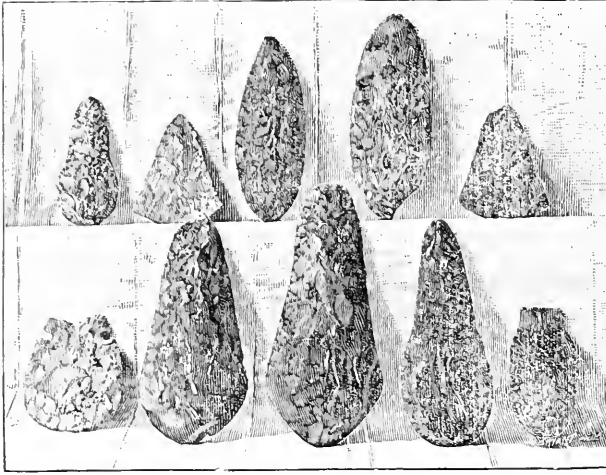
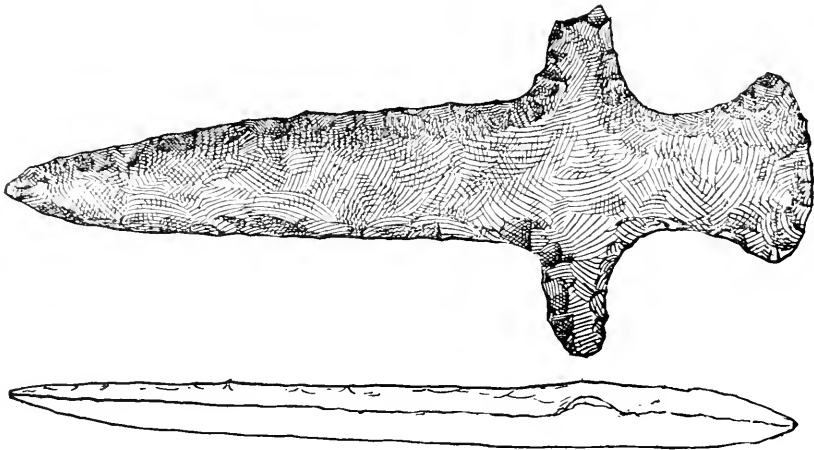


Fig. 213. S. about 1-13. From southern Mo., collection of Thos. Beckwith, Charleston.

The smallest of these is $1\frac{7}{8}$ inches long, by $6\frac{3}{8}$ inches wide.

The central one in the lower row is the longest; $18\frac{1}{8}$, by $7\frac{1}{8}$ inches. All are exceedingly well made. The several types are shown; notched hoe, oval spade, triangular spade, spade with broad digging blade and narrow top, etc.



Several specimens like those shown in Fig. 216 have been found and figured in the various reports. They are called daggers. Were they such? S. 1-2.



Fig. 217 is unknown and I pass it without comment. S. 1-3. Humphreys Co., Tenn.

General Thruston says: (page 240) "Here we have, in all probability, the scepters or royal maces once used by the magnates of the race that built the ancient mounds and fortifications of Middle Tennessee. They may have been the insignia of chieftainship or of the priesthood. The most distinguished personage of the Stone Grave race yet identified, if we may judge by the surroundings and character of his burial, the honored chieftain or priest whose remains were unearthed on the banks of the Harpeth river by Dr. Jones, was placed in his rude sarcophagus with a long flint sword or scepter, (22 inches) in his right hand, showing very conclusively the use of these large implements.

"If the reader will turn to the subsequent chapter upon shell remains, it will be seen that the "fighting figure," well engraved upon a large gorget, grasps in his right hand a double-pointed sword blade or knife of almost the exact form of some of these large flints. The double pointed implement, photo-engraved in Fig. 218 is nearly its duplicate, in shape and size, offering additional evidence of the genuineness of both the ancient gorget and the fine flint. The old chief or mythological hero engraved upon the shell evidently belonged to the Stone Grave race. Their remains are found in the valleys of East Tennessee and in Northern Georgia, in the mounds in which the gorgets have been discovered.

"La Vega tells us that the large wooden statues guarding the gates of the rude temple discovered by De Soto on the banks of the Savannah river, at Tolomeco, were armed 'with clubs, maces, and copper hatchets;' also that some of them were armed with long pikes;* thus indicating that the southern Indians, within the historic period, were acquainted with the uses of such objects, as insignia of authority.

"Upon public or state occasions, the historic tribes paid considerable attention to forms and ceremonies. The tatoo marks, the number of feather plumes, the battle axe or war club, the engraved breast-plates, the upholding of the pipe of peace, were insignia or symbols of rank and authority used and respected by them. We learn, also, that clipped implements of chert, jasper, and obsidian were used by the Indians of California upon public and ceremonial occasions."

(I took the liberty of changing "Plate XI" to Fig. 218 to correspond with my series).

It appears to me that Gen. Thruston's theory must be accepted as a final proposition—unless we discover something better. Compared with civilized peoples, prehistoric tribes had very few arts. Long experience in flint chipping had made certain of the artisans exceedingly proficient, and they evidently aspired to display their ability and to leave substantial and lasting evidence of it. Manifestly, such objects as Gen. Thruston presents have no utility and they must have been kept by the tribes as sacred possessions. Of modern times, the skillful worker in iron prides himself in a highly decorated gate or a certain hammered pattern of intricate design or beauty. The same may be said of workers in brass, cut-glass, etc. A cut-glass pitcher is neither as practical nor as substantial as a white china

* History of Alabama (Pickett), Vol. I, page 66; Garcillaso de la Vega, pgs. 274, 282.

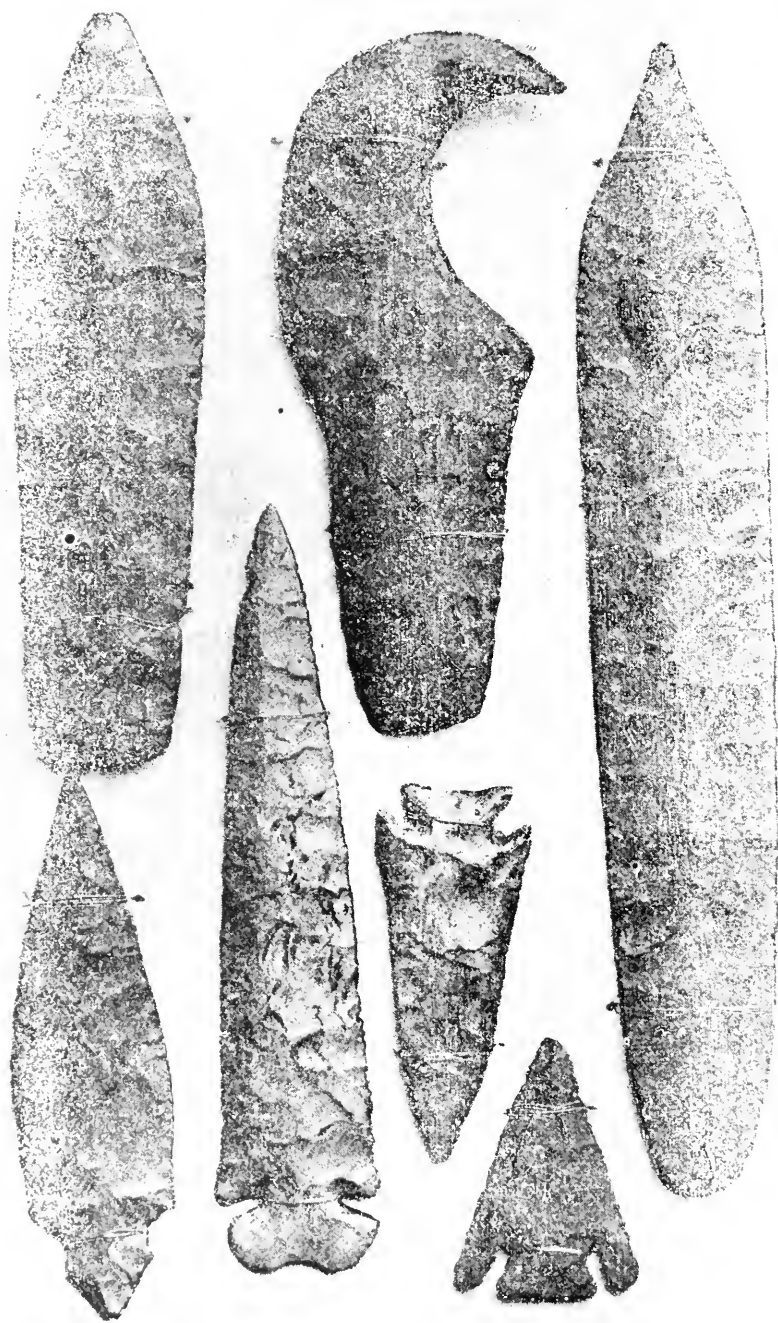


Fig. 218. S. 1-2.

Fig. 218. S. 1-2. The pointed implement (rounded top) is of cherty flint, 12 inches long. It is only $\frac{1}{3}$ of an inch thick. "The sharply pointed barbed spear is of yellow jasper;" 8 inches long and a marvel of chipping art. It is symmetrically beveled making it rotary. "The beautiful, curious, hook-shaped implement, a light brown flint, is $7\frac{1}{2}$ inches long. Historical Society and Gen. Thruston's collections. All found in Tenn.

pitcher; yet china pitchers have no place in ceremonial affairs, nor are they conspicuous at weddings or dinners. Most of these artistic objects are of but slight use in themselves. We prize them because of their rarity, beauty and expensiveness, and because they appeal to our conception of the artistic. Why should not this have applied to the "high art" of ancient times? We would not consider one of these ceremonial flint implements as an evidence of "high art" in our civilization of to-day. But, from the testimony of the mounds, it represented the highest attainment of prehistoric man in Tennessee.

More large effigy, ornamental or plain pipes are found in the Middle South than elsewhere. General Thruston, Col. Jones and others show many. Mr. J. D. McGuire in *Pipes and Smoking Customs of the American Aborigines** presents figures of at least 70 Southern forms. I would advise all students to read his excellent monograph. Dr. E. A. Barber is another authority on pipes and has written several papers upon this region.†

Figs. 219-22 are large effigy pipes supposed to have been smoked at councils, during ceremonies, etc. They are too massive for individual use. I have always thought that they were tribal (or clan) possessions.

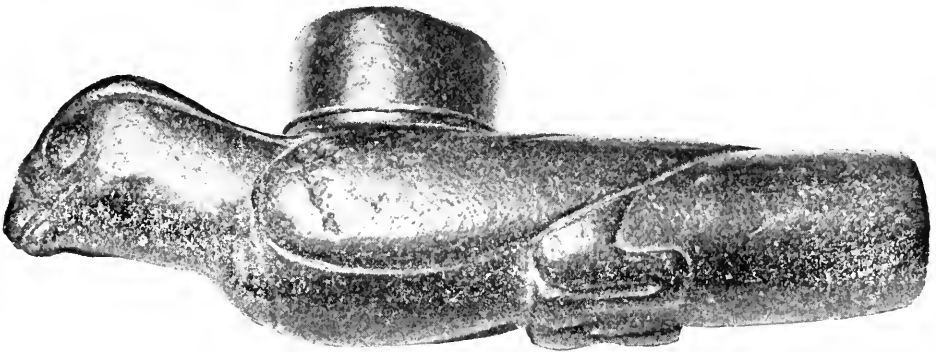


Fig. 219. S. 1-2. Found in June '84 near Grand View, Louisa Co., Iowa, (12 miles west of Muscatine). Material, black chlorite. Collection of Jas. M. Wier.

Mr. McGuire says: "Pipes of this kind are of the most ponderous character of any American type known, Strachen's description of the pipe would really answer for this, and he does not exaggerate when he says the pipe of a 'Susquehannock Indian' was 'three-quarters of a yard long, prettily carved with a bird, deare, or with some such device at the great end sufficient to beat out the braynes of a horse,' though he has evidently copied John Smith's earlier description, who asserted that these pipes were sufficient to 'beat out a man's brains.'" With all respect to these gentlemen I do not believe such pipes as are presented in Figs. 219-22 were individual property. We have little positive or reliable evidence of their use. As a personal opinion merely, I would venture this suggestion:

Perhaps, they were placed in the center of assemblages on occasions of importance, and smoked through a very long stem. The priest or chief in

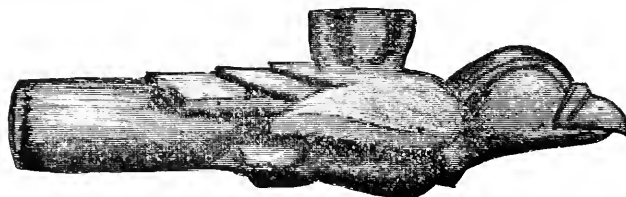
* Smithsonian Report, '97, pp. 351-645.

† American Naturalist and American Antiquarian.

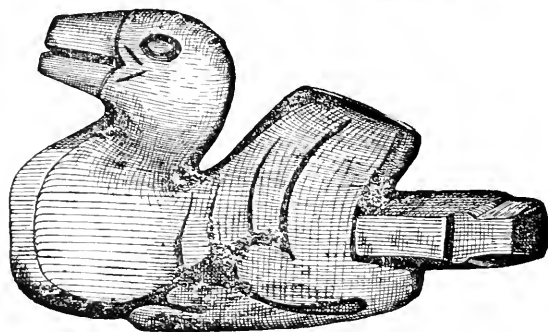
charge of the ceremony kept the pipe filled and lighted. The men passed the stem from one to another, and the pipe slowly turned in its central position. Certain ceremonial forms were enacted during the smoking.

The workmanship on these 4 pipes cannot be excelled. In Fig. 219 the eyes are represented by sunken discs. I suppose pearls or other valuables were inserted in these apertures.

All sorts of pipes of many stones, are found. Talc, serpentine, sandstone, jasper, shale, limestone, granite, etc., are in evidence as materials. A few catlinite pipes of ancient forms have been taken out of graves or mounds.



Flying Bird Pipe. Anderson Co., Tenn. S. about 1-4. Collection of Mr. James Terry, New York. Green steatite, 16 inches long. A toucan, or some southern bird. Fig. 220.



Duck Pipe, Tenn., S. 1-3. Gen. Thruston's collection. Weight. $3\frac{1}{4}$ lbs. Dark gray steatite. The feet are webbed, but the bill is hardly duck-like. Fig. 221.



Fig. 222. Human effigy pipe, from near Kingston, Tenn. Gen. J. T. Wilder's collection. S. 1-2. Material, reddish-brown jasper or shale.

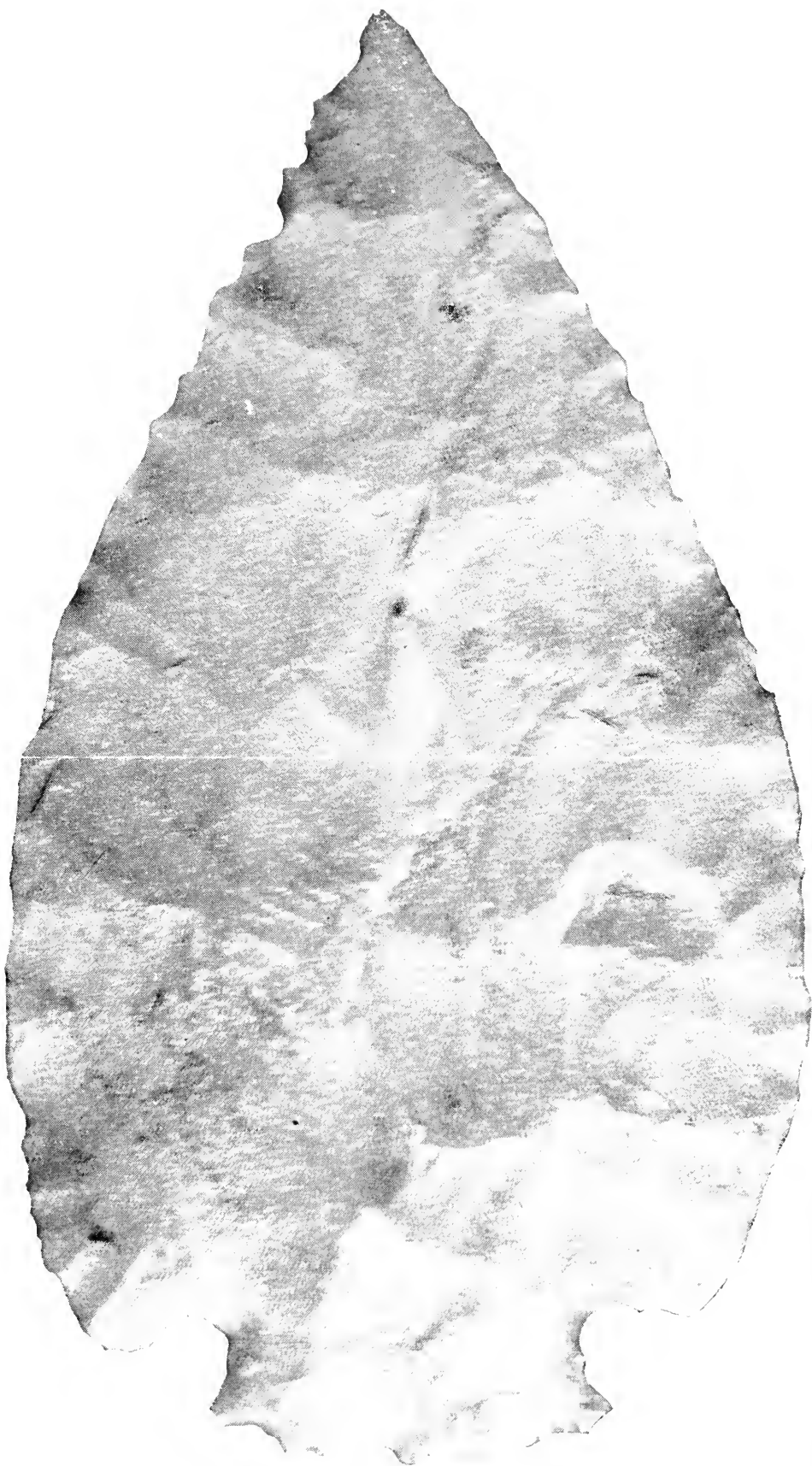


Fig. 223 Scale 1-1. Large, broad spear-head of quartz-like material; from the collection of Mr. Joe A. Young, Bellevue, Iowa. Found in the immediate neighborhood. The most remarkable specimen of its kind I have ever seen.

I say *ancient*, for there is evidence that catlinite was used in prehistoric times, although it was not extensively employed until some time after the Columbian era. Plain bowls without stems, the L shaped and other forms are similar to St. Lawrence and Ohio Valley types. I shall illustrate them in other sections and it is unnecessary to duplicate the types here.

Mr. J. D. McGuire* places the monitor pipe, the simple bowl and face-shaped pipes in the Middle South; also the peculiar form of a round or angular bowl and short round base which he calls Southern Mound type; the disk or jewsharp pipe and the biconical, the tubular and the heavy, broad form, etc. He illustrates all of these forms:



Fig. 224. S. 1-2. A very finely carved pipe from Montgomery Co. Collection of Col. Bennett H. Young, Louisville. I am indebted to Colonel Young for making illustrations of some of his best specimens. I have never seen a pipe like Fig. 224, and consider it very remarkable.

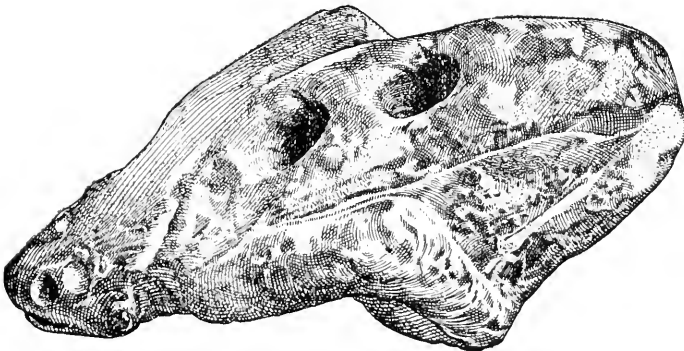


Fig. 225. Rude human effigy pipe. Possibly, unfinished. This is quite interesting. Col. B. H. Young's collection. Found in Southern Kentucky. S. 1-2.

*"Pipes and Smoking Customs." Smithsonian Report, 1897.

Fig. 230.

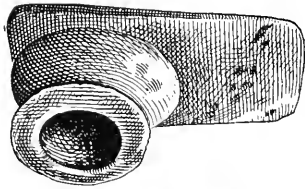


Fig. 231.

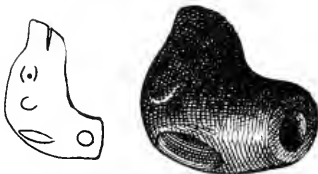


Fig. 227.

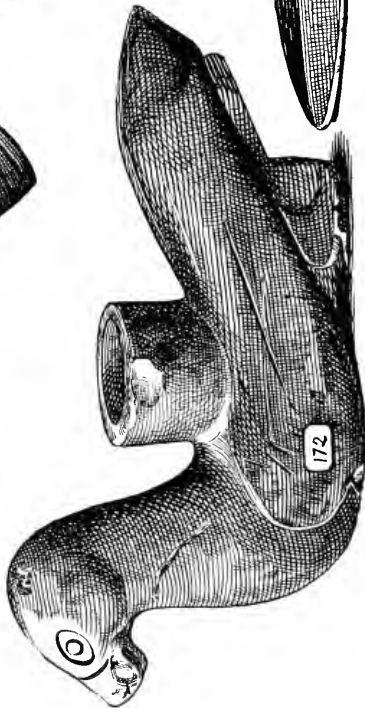


Fig. 226.

Fig. 229.

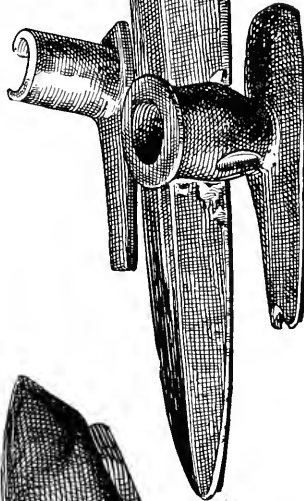


Fig. 228.

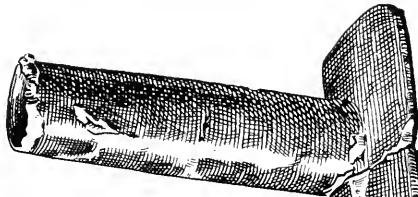


Fig. 226, S. 3-7. Fig. 227, S. 2-3. Fig. 228, S. 3-7. Fig. 229, S. 1-2. Fig. 230, S. 1-1. Fig. 231, S. 1-2.

Fig. 226 is a large duck pipe in the possession of Mr. W. F. Parker of Omaha, Nebraska. It is about three times the size of the illustration, and was found near Lookout Mountain Tenn., many years ago. It is a typical council pipe, made of dark, bluish green steatite and will hold a large handful of tobacco.

Fig. 227 comes from Romney, W. Va., and is of clay. It is of long, slender type, common to Western New York, and the South. It is the only clay pipe in the series herewith presented.

Figs. 228-9 are of platform type and are shown about one-third size. Fig. 228 is very rare, there being but about four or five specimens in the country. One is exhibited by the Smithsonian Institution; another by Mr. Parker. The bowl is about 7 inches in length and $1\frac{1}{2}$ inches in diameter, and would hold a large quantity of tobacco. The platform is 4 inches in width and about 14 inches long. Fig. 229 is of black steatite and highly polished. It was found in southern Kentucky.

Fig. 230 is of the platform type, and was found in one of the mounds of the Hopewell group in Ross County, Ohio. Its peculiarity lies in the fact that the bowl is near the end instead of in the middle of the platform. This specimen is about 2 inches in height and $3\frac{1}{2}$ inches long. It is in the field Columbian Museum at Chicago.

Fig. 231 was found in Warren County, Ohio, and appears to represent a bear. It is small and appears to be an individual pipe, instead of one used in councils. The bowl holds a little more than a thimbleful of tobacco, and during the smoking, the nose is turned down. It is of black granite. An Ohio type, it does not belong in this section but is inserted for comparison.



Fig. 232. S.2-3. Steatite pipe found in Cumberland County, Kentucky. Collection of Col. Bennett H. Young, Louisville.

This would be called by some observers a modified form of the monitor or platform style. It is a very beautiful specimen, well polished, etc. Great care was necessary to cut down the disc surrounding the bowl to uniform thinness. A slight error, a false blow, and it would have been ruined. The artisan knew his trade well.



Fig. 233, a steatite tube pipe from Sumner County, Tenn. These tubes are supposed to have been pipes. This one is 23 inches long and seems too large to have been used as a pipe. It has been suggested that they were used for other purposes. I do not know.

Some tubular pipes of the Middle South are much like those of the Pacific Coast. But Fig. 233 is somewhat different.

Fig. 234. made of oolitic limestone, from near Chattanooga, Tenn. This is one of the disc forms so frequently found in the eastern United States.

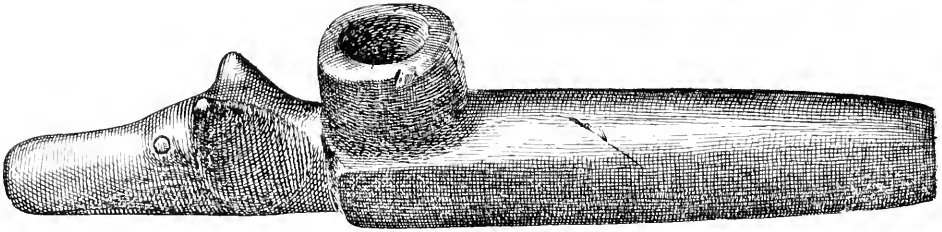
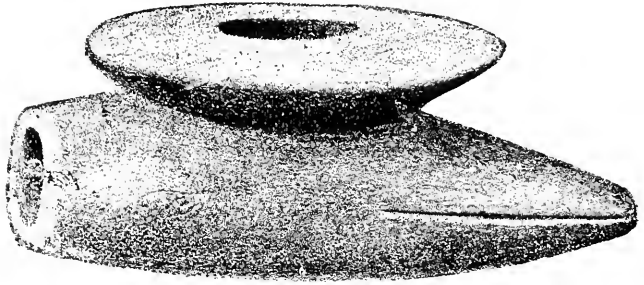
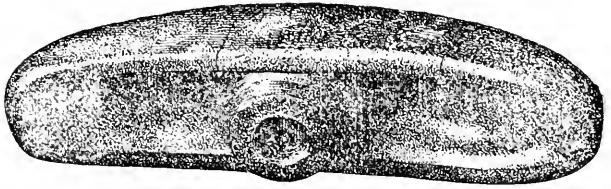


Fig. 235.

S. 1-2.

Fig. 236.



Both from Col. Bennett H. Young's collection, Louisville, Ky. Fig. 235 found in southern Ky. Fig. 236, found in Meade Co. Ky.

ORNAMENTS AND CEREMONIALS.

We all know what an ornament is. The word "ceremonial" carries no special significance and emphasizes the need of a proper archaeological nomenclature.

The slate, sandstone and granite ornaments, charms, gorgets, etc., are not very common south of Kentucky. In Tennessee many of the steatite and other soft stones are found. The later Creeks, Cherokees, etc. made ornaments and pipes of various bright colored soft stones and a collector must needs be discriminating. Limited space prevents a discussion of them. I will treat of the use, etc., of ornamental stones in the Ohio Valley section.

Fig. 237 illustrates 4 ceremonials. General Thruston says the spade-shaped ceremonial is of polished greenstone, 11 inches long, has a delicate blade, ornamented with notches. He has seen no object exactly like it. The largest one reported from Tennessee was 15¾ inches long; the smallest, 5½. In the center of the plate is shown a tubular pipe. This is a very fine specimen. A small ceremonial of characteristic Southern form is shown to the left of the tube. At the bottom of the plate is a crescent of highly polished syenite, 11½ inches long. One tip is slightly broken. A

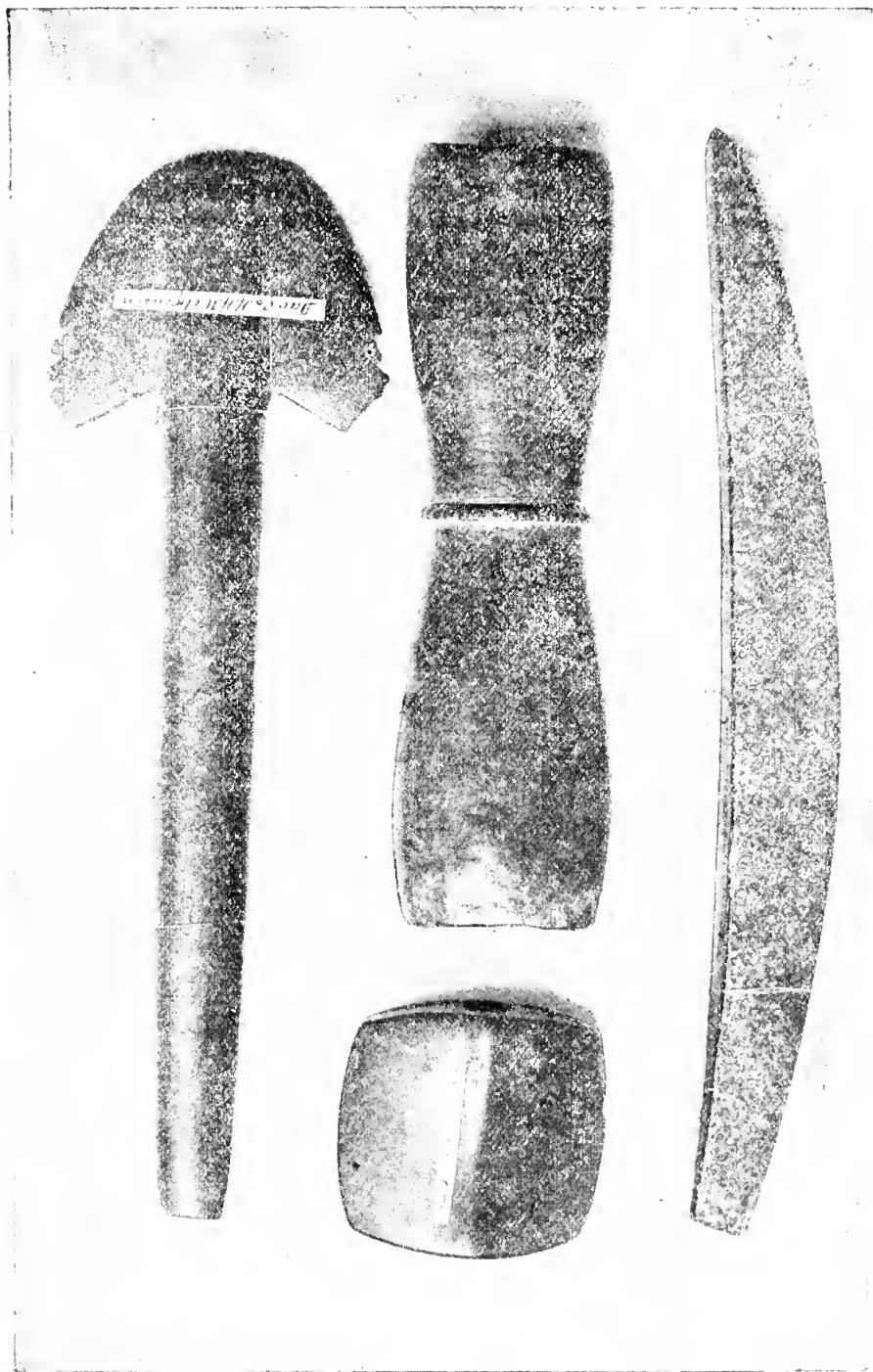


Fig. 237. S. 1 2.

similar one was found by Squier and Davis in a Scioto Valley mound. Another is in the collection of Dr. Leslie, Chillicothe, O. All three of these are of granite and highly polished. General Thruston says of them: (pg. 296) "These symmetrical crescents are too fragile for any practical use as tools or implements. Their graceful forms suggest that they may have been used as symbols by the sun worshiping priests of the Stone Grave race. A crescent, carved in stone, two inches wide, and eight inches from point to point, was discovered some years ago in a tumulus near Oakland, California. It was supposed to indicate the prevalence of sun-worship. A large tumulus in the vicinity was of the typical Tennessee form."*

Fig. 238 is a typical perforated ceremonial of the Middle South, and is also found as far south as the Gulf.

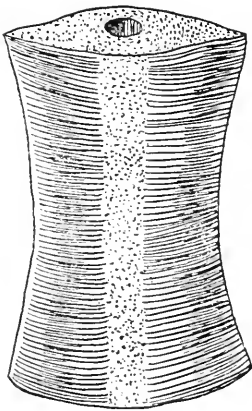
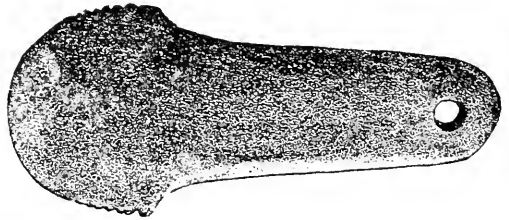
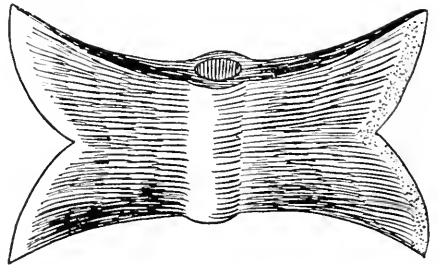


Fig. 239 is a peculiar spool-shaped stone (perforated) of blooded quartz from Montgomery Co., Tenn. Several more of these are found in museums and private collections. The quartz is white, light yellow, or grayish white and contains blood-red veins or discolorations. Specimens of such materials are always highly polished and seem to have been prized. The colors would naturally attract primitive people. I have seen ornaments of a bright green, shiny stone (soft), also of talcose slate, etc.

A "butterfly pattern" with a somewhat wider opening than in Fig. 241 is also found of blooded quartz. Mr. Norman Spang, of Pittsburg, has a score of quartz ceremonials.

Fig. 240. S. 1-3. Gray slate, Williamson Co., Tenn. This is rarely found North.



*"The large mound was circular in form, twenty-five feet high, and three hundred feet in diameter at its base. Rev. D. S. Peet, in *American Antiquarian*, 1889, page 361."

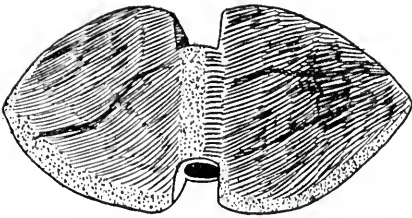


Fig. 241 is like our northern "butterfly stones" and needs no comments. Material, gray slate. The wings are more pointed and not so rounded as in Northern specimens.

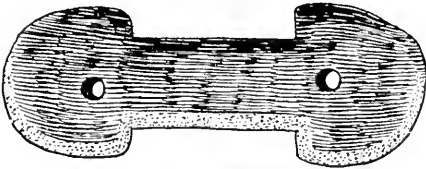


Fig. 242 is a peculiar, rare ornament sometimes found South or North. Manifestly an ornament, yet how and where shall we say it was worn? Or, was it worn at all? The archaeological wise men of the museums should solve these problems for us.*

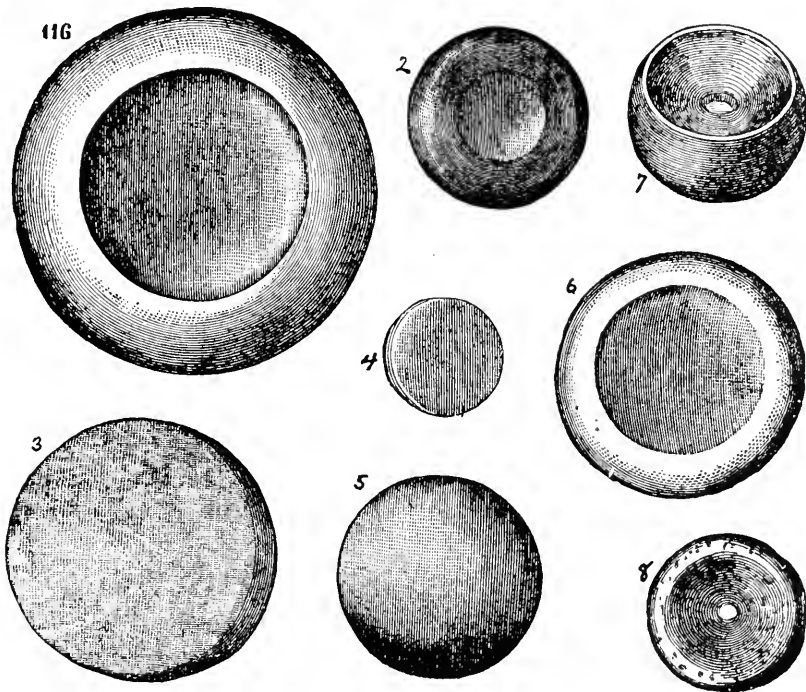


Fig. 243. S. 1-3. Typical discoidals from various localities.

116. Yellow, brown ferruginous quartz, Tenn.

2. Dark greenstone, from a mound, Ills.

3. Quartzite, Georgia.

4. Argillite, Penn.

5. Not given

6. Brown ferruginous quartz, Tenn.

7. Quartzite, Ohio.

8. Quartzite, Ohio.

This cut is from "A Study of Prehistoric Anthropology." Dr. Thomas Wilson, Smithsonian Report '87-'88.

*As I stated in the Bulletin (Bird-Stone Ceremonial) my idea in presenting these multitudinous, unknown forms is to provoke discussion and thus ascertain the views of observers regarding them.

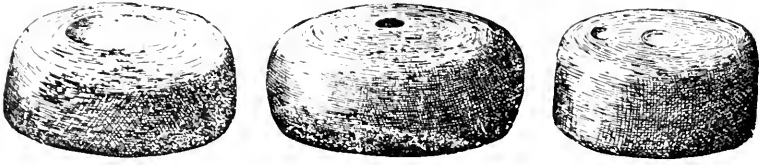


Fig. 244. S. 2-5.

This figure and 245 were taken from Gen. Thruston's *Antiquities of Tennessee*, and the specimens are in his private collection. It will be observed that there is a small depression in the center of each disc. The surfaces present a scratched appearance as if something had been revolving upon them.



Fig. 245. S. 2-3.

These cone-shaped objects are frequent in the Ohio Valley as well as throughout the Middle South. They are of quartzite, granite, hematite, etc.

BICAVE, OR DISCOIDAL STONES.

Dr. J. F. SNYDER, Virginia, Illinois,

[Dr. Snyder, the well-known archaeologist, kindly prepared a paper for me upon discoidals which I take pleasure in presenting. I can add nothing new to Dr. Snyder's able discussion, and heartily concur in all his opinions. —W. K. M.]

The urgent need of the science of archaeology at the present time is a revision of its nomenclature; especially in the classification of prehistoric stone implements. Such uncouth and meaningless names as "spuds," "bunts," "banner stones;" and the vague and indefinite terms, "ceremonials," "discoidal stones," "amulets," etc., should be discarded from our archaeological vocabulary, and replaced with names conveying some specific idea of the form, dimensions, or use of the objects. "Leaf-shaped," applied to certain chipped flints, is another absurdity, and about as precise for descriptive purposes as is "a chunk of rock" as a measure of magnitude; for there are leaves of many diverse forms, and we are at a loss to know what particular shape of leaf is implied.

The term "discoidal stone" is equally ambiguous and confusing; for among aboriginal stone relics, disc-like, or circular, stones of almost every size and variety occur, differing so widely in dimensions and details of figure as to render their classification under one title bewildering and misleading. Waterworn pebbles, circular and flat, or disc-like, were abundant and ready at hand almost every where—by the lake shores, or sand bars in every stream, and among the gravel beds of the drift formation—requiring but little modification by primitive savages to adapt them to use. And, we know, they were utilized in many ways, each of the modified forms serving, perhaps, a distinct and different purpose.

In our archaeological literature the generic term "discoidal" is applied indiscriminately to all round, non-spherical objects of stone, shell, bone, hematite, or pottery; including ornaments a fraction larger than beads, spindle whorls, club heads, hammer stones, and a host of others of unknown uses. It is time, I think, that we should adopt a more distinctive classification of these circular art relics of the stone age. The best known type of so-called discoidal stones—the type most generally referred to by that designation—is circular in contour, varying in width, thickness and material; and has cupped, or mortar-like depressions on each lateral surface; in some broad and shallow, and in others narrow and deep; and in a few so deep as to coalesce and perforate the stone. Fig. 246 represents this type, showing the hollow on one side, and a cross section through the diameter.

As the bilateral, saucer-like cavities on each side are characteristic of this type of disc-like stones, I would suggest, for convenience of description, its separation from all others of the group of round, flat, prehistoric relics now bunched together as "discoidals," and call them *bicave* stones, or *bicaves*, from the Latin *binus*, two, or double, and the noun *cavum*, a con-

cavity, or hollow; or the verb *cavo*, I hollow, or scoop. This name, in my opinion, would be far more expressive of the shape and peculiar conformation of the object than its present inexact appellation. To further specify that the bicave stone is discoidal, would be superfluous, as all bicaves, with rare exceptions, are round or disc-like.

When asked to what use the bicave stones were applied, the ready answer is, for playing games. How is this known? It is *not* known; but merely inferred from the accounts of early observers among certain recent Indian tribes who saw them playing games in which a round, flat stone was used. The impression that the hurling stones employed by modern Indians in these games were the identical bicaves in question, is so general, and so stated with such positiveness by certain writers, that it has become accepted as the true solution of the problem of the bicave stone's utility. An examination of the facts will, however, tend to dissipate this belief, and convince us that those strange and beautiful relics were not made for that purpose. It is altogether probable that, in some instances, modern Indians found prehistoric bicave stones, as we do, and adapted them to their games, as I have seen here, in Illinois, in early days, school boys use them as quoits for pitching, in the game of quoits.

The Indian game, in which round hurling stones were an important feature, has been seen and described by several early explorers; among whom was Adair, who has given us a concise and, no doubt, accurate account of it, as follows: "The warriors have another favorite game called *Chungke*, which, with propriety of language, may be called 'Running hard labor.' They have near their state house a square piece of ground well cleared, and fine sand is carefully strewed over it, when requisite, to promote a swifter motion to what they throw along the surface. Only one or two on a side play in this ancient game. They have a stone about two fingers broad at the edge, and two spans around; each party has a pole of about eight feet long, smooth, and tapering at each end, the points flat. They set off abreast of each other at six yards from the end of the playground; then one of them hurls the stone on its edge, in as direct a line as he can, a considerable distance toward the middle of the other end of the square; when they have ran a few yards, each darts his pole, anointed with bear's oil, with a proper force, as near as he can guess in proportion to the motion of the stone, that the end may lie close to the stone; when this is the case, the person counts two of the game, and, in proportion to the nearness of the poles to the marks, one is counted, unless by measuring, both are found to be at an equal distance from the stone. * * * * *. The hurling stones they use at present were, time immemorial, rubbed smooth on the rocks, and with prodigious labor; they are kept with the strictest religious care from one generation to another, and are exempted from being buried with the dead. They belong to the town where they are used, and are carefully preserved." Capt. Bernard Romaine, (1775) says the hurling stone with which the Indians play the game of *Chungke* "is in shape of a truck," i. e. a small wheel; and Dr. Pratz (1774) describes it as a "flat, round stone, about three inches in diameter, and an inch thick, with the

edge somewhat sloping." Lieutenant Timberlake (1765) says it is "a round stone, with one flat side, and the other convex." Catlin, who saw the game played much later, says the hurling stone used was a "round stone ring."

It will be noticed that none of these writers, who describe the Indian game, mention the hurling stone as having lateral indentions. Those Adair saw used, "two fingers broad at the edge," were certainly not of the common form of bicaves represented by Fig. 247. He says the *Chungke* stones were not buried with the dead; but it is well known that bicave stones frequently were so deposited. I have one taken by myself from a stone grave in Tennessee; another I exhumed from an aboriginal cemetery in southeastern Missouri, and several others recovered from mounds and graves near the Illinois river. Judging the prehistoric Indians by their descendants of recent times, we may well rest assured that they were not so fond of labor as to carve, from the hardest rocks, and beautifully finish, the bicave stones, and grind out the hollows on each side with such care and precision, without some well-defined purpose. No Indian would ever have bestowed the arduous work required to make these cavities, and to round the edges of the stone, and finely polish it, that in the silly and stupid game of *Chungke* would be entirely useless; when a plain round stone, with flat, or convex, sides, would answer the purpose better. Not one of the bicave stones presents abrasions, or marks of attritions about its periphery, that would invariably be present had it been used by hurling on a hard clay or sandy surface. Many of these strange relics, by reason of their diminutive size, and the fragile material of which they have been formed, could not possibly have been used in any such game as *Chungke*. They range in diameter from one inch, to six, or eight inches; and in material from clay to the most refractory crystalline rocks. In my collection is one, of quartz crystal, but a fraction over an inch in diameter; another, a little larger, is of hard white clay unbaked; several have been found in this state moulded from pottery ware, or clay, burned, and smoothly polished; and one, from an Illinois river mound, was sculptured from bituminous shale, and finished to a glossy polish. They all have the bilateral cavities, and the same purpose was evidently the motive in the manufacture of all.

It is possible that some of them were gaming devices; but surely if they all were so employed, considering the vast numbers of them found, gambling must have been the sole occupation of the native American. Gen'l. Thruston says, "very great numbers of them must have been used in Tennessee;" and all writers on prehistoric remains in the Mississippi valley mention their numerous presence. To my personal knowledge more than three hundred of them have been found within a radius of twenty miles around Beardstown, on the Illinois river, and they have occurred about in this proportion throughout the valley of the lower Illinois, and borders of the Mississippi. They are here most commonly found about the old village sites and camping places, associated with stone and bone implements and camp refuse. I have two small bicave stones that were turned up by the plow in this (Cass) county, on old Indian campsites, several miles apart, having in

one hollow of each a smooth waterworn pebble, as shown in Fig. 248. The contact of the stone and pebble may have been accidental; or may be evidence that the two were used together in gaming, or some other purpose; but, in both cases, the two had been so long together that the calcareo-ferruginous earth in which they were imbedded cemented them so firmly that some force was necessary to separate them.

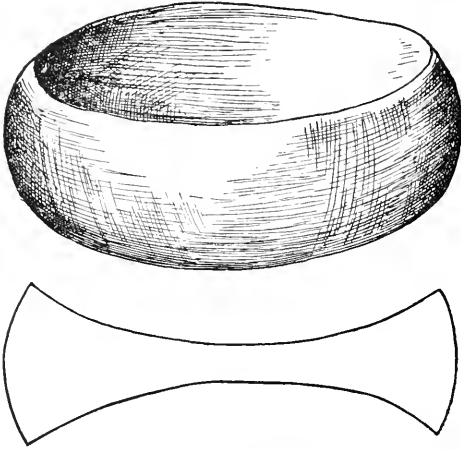


Fig. 246.

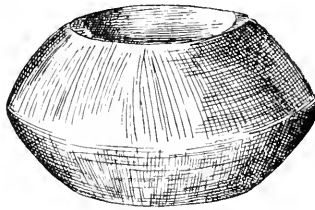


Fig. 247.

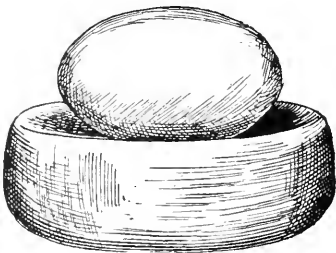


Fig. 248.

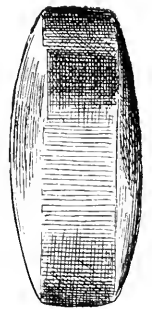


Fig. 249.

The real *Chungke* stones used by the Indians, and in every way well adapted to the requirements of that game, are not unfrequently discovered, particularly in the south, where that game was most in vogue. The specimen of it shown in Fig. 249 was found in the debris of an old Indian village in Phillips county, Arkansas. The stone is a hard, yellowish quartzite, three and three-fourths inches in diameter ("two spans around"), and an

inch and three-quarters in thickness in the center; with both sides convex, and edges square, an inch, or more, ("width of two fingers") wide. They are classed as "discoidals," and are seen in all museums and other large collections.

The old idea, sometimes still advanced, that bicave stones were intended for paint mortars, is scarcely worthy of notice. Only an idiot would think of making a mortar on opposite sides of the same rock; or excavating, for that purpose, both sides of a circular stone but an inch in diameter; or of constructing a mortar of clay, pottery, or shale. The cavities of the finished bicaves are never striated, or roughened, as would be the case if brought in contact with stone pestles; but present the regularity of proportions, and smoothness of surface, that could only be produced by a rotating instrument, probably of wood. In a few of the bicave stones it seems that this rotary grinding process continues as long as they were in use, gradually carrying the cavities down deeper; but in the greater number the cavities were evidently sunk to the specified depth to fit them for their intended use, and then polished. Occasionally in one, or both cavities of a stone are seen incised lines in the form of a bird's track, which, no doubt, had some significant meaning connected with the stone's office. It is often the case that these stones are found—as are sometimes celts, grooved axes, etc.,—saturated, or heavily coated, with oily pigment, accumulated apparently by long contact with animal fat. If one in this condition is boiled in water, or subjected to immersion in a concentrated solution of sal soda, for a few hours, the greasy matter will be extracted and seen floating on the surface of the liquid, and the stone will be clean and bright as in its original natural state. This fact, together with their great numbers, their wide distribution, their various dimensions, forms, and degrees of fine finish, and their presence in old village sites and camp refuse, strongly suggest the probability of their economic use as domestic implements. To me they are the most incomprehensible of all prehistoric stone relics. In our ignorance of primitive Indian life we know of no industry or art practised requiring these round bicave stones. They cannot reasonably be placed in either of those illy-defined and questionable classes styled "ceremonials," "charms," or "talismans"; nor can we assign them to the catagory of ornaments, or weapons. Were they tools of the potter, weaver, or basket maker?

ADDITIONAL INFORMATION.

Many collectors residing in Iowa, Missouri, etc., have sent me photographs and drawings.

Mr. Jasper Brown, of Norway, Iowa, has a large cabinet. He possesses a very rude grooved axe found 12 feet below the surface. The groove is wide and shallow. He reports ornaments and other objects typical of the Plains and Middle South border. An ornament (like the fourth one to the right of *b* in Fig. 3) had long projections at the lower end. There were five notches near the perforation. Several large flint spears, but smaller than Fig. 223, have been found. Hematite is not rare. He reports one copper spear-head.

A gentleman residing in Wapelow County, Iowa, makes drawings of such specimens as have already been shown. In addition he illustrates rude axes (not polished) and large, rough knives.

Mr. E. H. Collins, of Cherokee, Iowa, has many curious objects in his collection. Some carvings on stone appear to have been made by Plains tribes. Several odd shaped catlinite pipes; a fine bone fish hook, rare in his region; a carving of a buffalo done on stone; pottery handles and decorations, etc., he has beads and other ornaments from this region. Jasper was frequently found in the South, but is usually fashioned into arrow or spear points and seldom made into ornaments.

In some of the pottery has been observed carbonized fruit and food.* A valuable paper appeared in the *American Anthropologist*, volume 5, page 67, by Professor Holmes, entitled "Studies in Aboriginal Decorative Art." His remarks on the pottery of the South Appalachian earthenware are particularly valuable to students of this section. Cupped and pitted stones are very numerous in the Middle South but will be described in a later section.

Mr. Joe. G. Young, of Bellevue, Iowa, kindly made for me an illustration of the largest broad spear-head I ever saw. Fig. 223 reproduces it full size. It was found near Bellevue. The material is a peculiar quartzite; greyish with a tendency to pink shades in spots. It is a very beautiful specimen and doubtless has few equals in North America. In this statement I waive the long, narrow ceremonials of obsidian, flint, etc. A few nearly this large have been discovered in Wisconsin and elsewhere.

Stone tubes are thought, by Dr. Thomas Wilson, to have been musical instruments.† However, he qualifies his opinion by stating that the larger tubes may have been such.

STONE TUBES, POSSIBLE MUSICAL INSTRUMENTS.

"In the National Museum are a number of stone tubes of cylindrical and other forms, of different lengths. The smaller ones, often only a few inches long, have been thought to be ornaments. A variety of uses are ascribed to the larger objects, the most plausible being that by the medicine men for the pretended cure of disease. Their use for smoking, or as whistles or calls has also been suggested. By proper manipulation they will emit a sound which can be heard for quite a distance, and it is possible they were used for that purpose. This remark applies to the tubes which have cylindrical holes drilled almost the entire length and then finished with one of smaller diameter, and also to the class which have biconical holes, having been drilled from both ends, and then scooped out with a tool so that the hole conforms somewhat to the outline and is smallest in the center. These objects, if musical instruments, were not whistles but trumpets, for the sound can only be made by blowing in the same manner as are instruments of that class. The materials are usually soapstone, banded slate, and chlorite, although specimens of sandstone are not wanting." Mr. J. D. McGuire‡ seems to consider that the tubes were all used for smoking.

*Footprints of Vanished Races in the Mississippi Valley." A. J. Conant. St. Louis, 1875.

†Prehistoric Art; Or the origin of Art as Manifested in the Works of Prehistoric Man; Wilson, Smithsonian Report '96, p. 581.

‡Pipes and Smoking Customs of the American Aborigines; Smithsonian Report, '97.

CONTINUATION OF THE MIDDLE SOUTH.

COLONEL YOUNG'S COLLECTION.

I have always said that Kentucky has been slighted by archaeologists. When the surveys get to work there they will find it one of the richest sections in the Mississippi Valley. Very remarkable specimens in point of finish and design have come to light, and I suppose Col. Bennett H. Young, of Louisville, has the largest and best exhibit in the state. Truly, it should be considered a private museum. Col. Young has very kindly made for me numerous illustrations of some of his treasures and I only regret that lack of space prevents my printing all his remarks in full.

One of the strangest things in Middle South archaeology is the high art exhibited in the exceedingly small points found at Moccasin Bend, Tennessee river.

The various illustrations of these little gems will give readers an idea of their beauty, so far as outline is concerned. But it is to be regretted that the colors cannot be shown. In short, the illustrations do not do the objects justice.

Col. Young has the largest collection of these small Tennessee arrow-points in this country. Not more than 500 have been found, and he has in his cabinet a collection of 350. They have attracted attention and created much interest wherever exhibited and for a long time many people were disposed to believe they were counterfeit productions of the present time. In order to satisfy himself of the absolute authenticity and genuineness of these arrow-points, Col. Young, on two occasions, visited the place where they were found. He crawled on his hands and knees over the sand, sifting it, and after three days hard work secured two very fine specimens and found hundreds of broken pieces, showing that these arrow heads were made at Moccasin point in large numbers. The spawls from the agate and flint are still found in large quantities; but whatever race made them had evidently attained the highest possible skill and perfection in the manufacture of arrow heads and obtained a knowledge which had not been communicated to other tribes, for in the same locality, within a hundred miles of this point, no similar articles have ever been found.

I make quotations from Col. Young's letters of description "The most unusual of the objects on this card is the flint fish hook, which has a well defined barb. The small drills at the top of the plate and one at the bottom are very unusual, some have square, some have rounded heads. All of these came from Williams Island in the Tennessee river, at Moccasin Bend. They are not only of splendid material—many of them being of agate—but the points are very sharp, the serration is regular and even, and the shoulders to the points are not only very much prolonged but the points are fine as a needle. These were evidently made in modern times. It is impossible to conceive of such serrations on arrow-heads of such small size

without the use of metal implements of some kind, either for the purpose of sawing the material from which these points were made or for the purpose of cutting them."

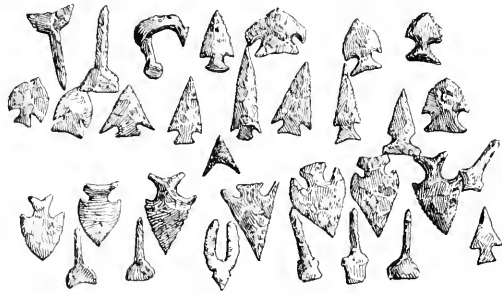


Fig. 250. Col. Young's Minnte Points from Tennessee. S. 1-1.

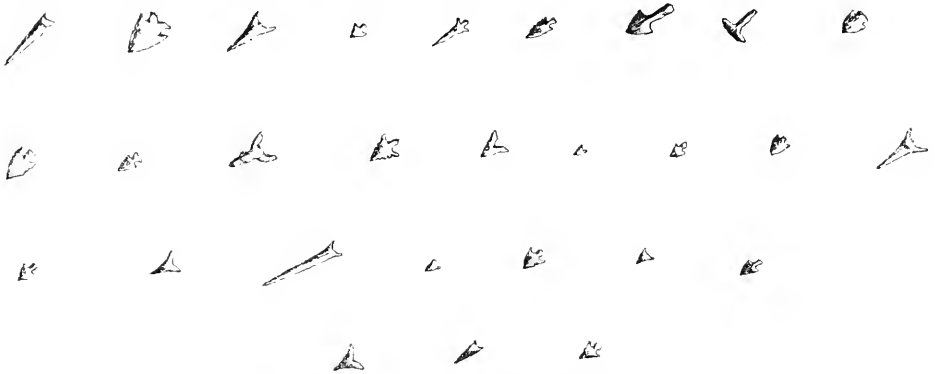


Fig. 251. S. 1-1. Col. Young's Collection.

Some of Col. Young's smallest. He sent me 29 of these for inspection and I do not hesitate in saying that they are marvels of skill and beauty. I can give no reason for their manufacture, nor can I conceive *how* they could be chipped down so small.

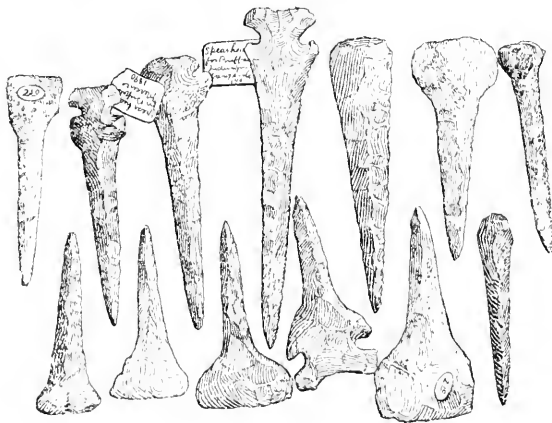


Fig. 252. S. 1-3.

The two longest of the arrow-heads in this collection were found on the great buffalo trail which led from Memphis, Tenn., up through Kentucky to the Salt Springs at Blue

Licks. It is exactly 6 inches in length and is very beautiful; it was evidently used for the killing of buffalo.

"The next one is 5 inches in length and was likewise found on the buffalo trail, while the third one is 4 $\frac{1}{4}$ inches long and was also found there.

"These buffalo were the first and best engineers that explored Kentucky. Traveling from the prairies of the West to the salt licks so abundant in Kentucky, they had trails as long as 500 miles, and when in modern times railroad engineers found it necessary to survey the best route for railways, it was discovered that these buffalo by their early explorations had already traced the best lines for travel, whether by foot or by rail."

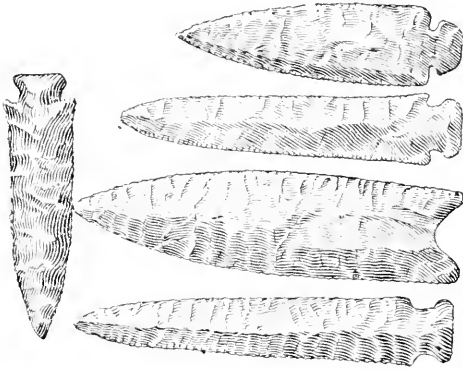


Fig. 253. S. 1-4. The fluted spear-head in this cut is 8 inches long and 2 inches wide. It was found in Woodford county, Kentucky. It is an unusual shape and was more than likely used as a spear-head in the destruction of buffalo. The others came from Central Kentucky.

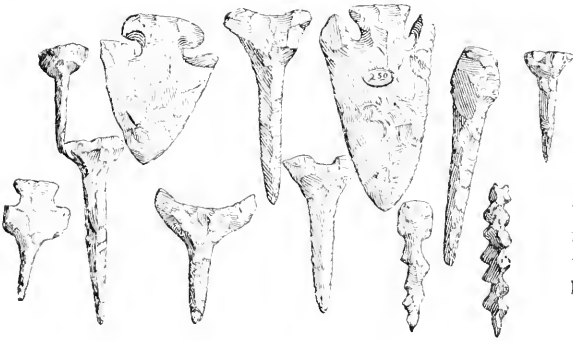


Fig. 254. S. about 1-3. These drills and spear-heads came from the Tennessee river near Williams Island (not far from the famous Moccasin Bend), a short distance below Chattanooga. They are made of various flints and agates. The spiral points were found in a grave near the river bank.

Fig. 255. S. 1-1. Minute point from Dr. H. M. Whelpley's collection, St. Louis. It was also found at Moccasin Bend. Contrast this one with the immense 20-inch implement shown in Fig. 203 and you will form a conception of the range and variety of prehistoric American flint weapons and tools.



Fig. 256. S. 1-1. Small arrow-head from Mississippi. This is about as small as is found out of Tennessee in the South and is introduced by way of comparison.



Fig. 257. S. 1-5. This axe was found near Somerset. Pulaski county, Kentucky, close to the waters of the Cumberland river. It is made of slate and is unusual in that it has a groove on it and a face in which the mouth, nose and eyes are perfectly distinct and gives this axe the appearance of a skeleton. It is beautifully polished.

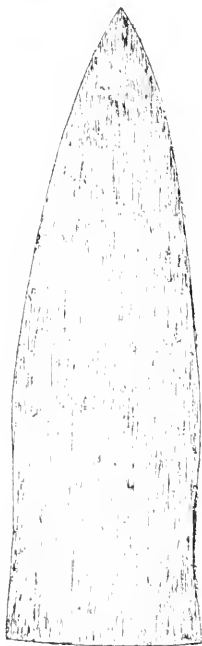


Fig. 258. S. 1-2. Col. Young says: "It is a dagger; you can determine this by the depression at the base where it would be held in the hand."

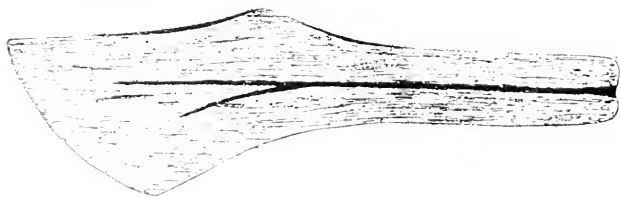


Fig. 260. S. 1-2. Stone knife. Col. Young sent me these three fine specimens. They are a dark, reddish brown stone, unknown, very highly polished and exceedingly rare.

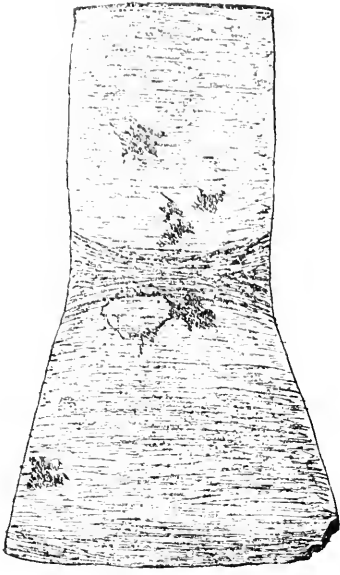


Fig. 259. S. 1-1. "I do not know what this was used for. I sent this to the Smithsonian Institution for them to determine the nature and character of the stone, but they could give me no satisfactory statement of what it was or where it came from. These three articles were found in a niche of a rock in Pine mountain, Bell county, Ky. At the same time several arrow-heads were found. I have been able to get only one of the arrow-heads. The stone is very unusual and the finish is also very fine. They were found by a coal miner who gave them to a physician, from whom I got them at Jellico, Ky. I know nothing of their history except the statements of the men as given to me, but they are very handsome specimens and I value them highly." This object is grooved and has a very sharp edge.

Col. Young sends me additional notes concerning his pipes illustrated on pages 155 and 158. Unfortunately, these came too late to be inserted in their proper places.

Of Fig. 225 he says, "This pipe was found in Nicholas county, Kentucky, on the banks of the Licking river, near the Blue Licks battle field. It is $10\frac{1}{2}$ inches long, and weighs $4\frac{1}{2}$ pounds. On its back it has two holes for smoke, which are united at the bottom. The tobacco was evidently placed in either of these two holes or bowls, and the pipe stem was inserted on the opposite side. It represents a huge green frog such as are found in Kentucky, with white belly. While the artistic points are crude, they are yet a most faithful representation of this animal. The pipe was placed on the ground and from it the smoke came through the back."

Of Fig. 235. Col. Young says: "This pipe has an unusual history. It was found in a mound in Hart county, near the banks of Green river. The mound was built on the bottom lands of Green river and was covered with very large timber; on the top of the mound in which this pipe was found was an immense beech tree. The beech tree was blown down and in the roots of the tree, this pipe, in several pieces was discovered. It was taken out and the pieces were ingeniously put together by Col. Robt. Mumford, lately deceased, who was one of the most distinguished archaeologist in Kentucky. After preserving it for many years, he gave it to me. It is 17 inches long, the stem is 8 inches in circumference and the bowl is $1\frac{3}{4}$ inches in width." It weighs 8 pounds. It is made from oolitic limestone.

ORNAMENTS, ETC. FROM MR. WIER'S COLLECTION.

Before completing the Middle South section I desire to present 11 stone ornaments or ceremonials from Mr. James Wier's collection, Muscatine, Iowa. Some are occasionally found but most of them are rare.

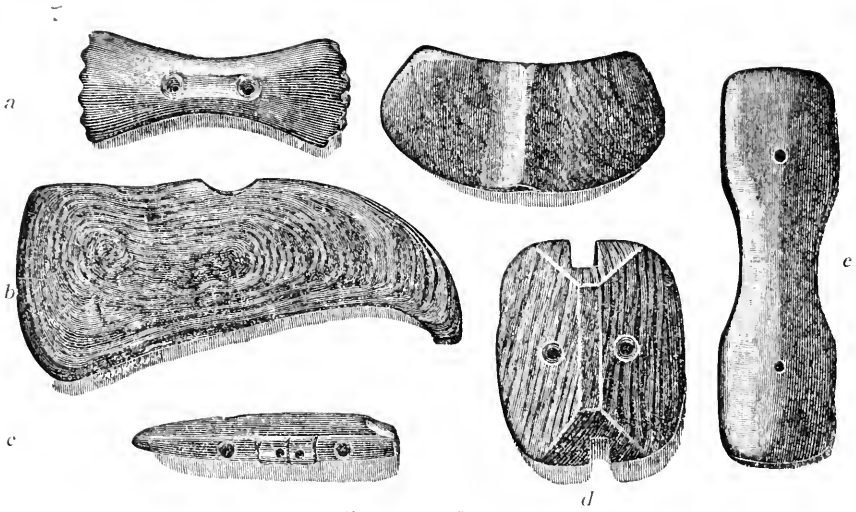


Fig. 261. S. 1-2.

a Ornament with fluted ends.

b Rare ceremonial (?) perforated, curved and having a broad, sharp blade-edge.

c Unknown ceremonial.

d This object is of pyramid form perforated through like a "butterfly ceremonial" and also perforated from upper to lower surface. The archaeological wise men of the museums will have to name it.

e A long ornament, very nicely made.

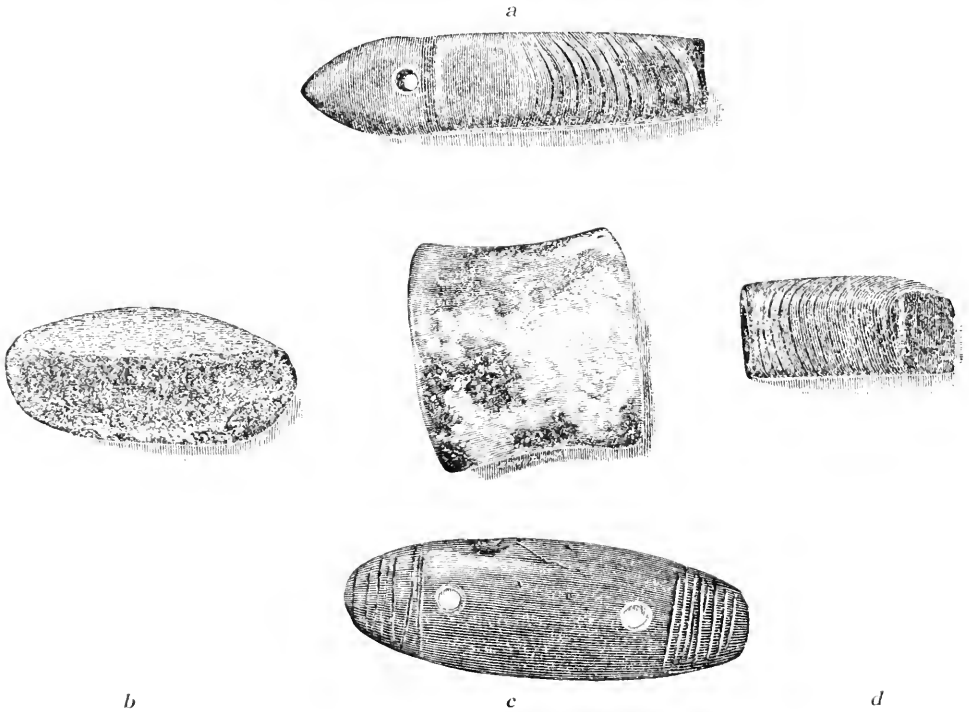


Fig. 262. S. 1-2.

Fig. 262. The Jas. Wier collection.

a Long ornament, one perforation and grooved. Unknown.

b Boat shaped ceremonial of granite.

c Ornament with lines cut across each end.

d Tube-like stone, unknown.

In the center, typical Middle South banner-stone of white and pink quartz. Perforated. A fine object.

WHERE SPECIMENS MAY BE PROCURED.

I receive many letters from students requesting information as to where they can purchase specimens, and as to the best localities for field searching, buying of farmers, etc. Missouri, Illinois, Iowa, Tennessee, Georgia, Kentucky and Mississippi are not overrun by collectors and if persons can visit certain counties in those states I think that they will be able to secure many ancient objects at reasonable prices.

A few "dealers" in archaeological material are reliable and honest. But many have sold bogus "relics" as "genuine prehistoric art forms," etc. A bill is now (April 10th.) before congress to make "relic" counterfeiting and the destruction of monuments a penitentiary offense.

As was intimated on page 18, the best way to enlarge a cabinet is to visit a rich territory and carefully canvass it. Wheeling is out of the question in many places; a horse and buggy being necessary, for the roads are rough. A partial list of localities is as follows: Southeastern Mo.; Southern Ills.; the great valleys of the Cumberland and Tennessee; Licking, Ross and Scioto counties, Ohio; the Knawha Valley, W. Va.; Eastern Iowa; the Illinois Valley, (southern part) Ills.; the cemetery region of Memphis, Natchez, Greenville, Paducah, Enola, etc., of the South; New Madrid Co., Mo.; Poinsett, Cross, Crittenden Cos., Ark.; Eastern Indian Territory, etc.

Small collections are in the hands of farmers, doctors, storekeepers and boys throughout this vast region. Some want much, others can be bought for a dollar or so. There are no set values and the cost of a rare object or of a collection depends on two things: how keen the purchaser is to possess it, and the price desired by the owner. Most of the more valuable collections have been bought by museums. Single rare objects may be had of the three or four dealers of good reputation.

Pottery used to be common in the Missouri, Arkansas and Tennessee region, but now many farmers demand money for "digging privileges" and the most accessible sites are explored. The largest collection of really good material sale now for from the Middle South that I know of is owned by the legal firm, Messrs. Pogue & Pogue, U. S. Bank Building, Cincinnati, O. It formerly belonged to a well-known collector who spent many years and a large sum in its accumulation. It is on exhibition in the Cincinnati Art Museum.

There are 100 fine vessels, bowls, etc., and 5 large idols in it. There may be other objects, for aught I am aware. The idols range from 20 to 28 inches in height and weigh 25 to 40 pounds each. All are well made.

Collectors who do not travel in search of specimens are often able to secure them by correspondence. I have no faith in the scheme of exchange resorted to by beginners. As a rule, it is simply a "gouge game" in which Mr. Z. expects to trade his worthless things for Mr. X's best material. There are exceptions; notably the exchanges of museums and well-known collectors, the exchange of books, reports, etc. for specimens. If a beginning collector can secure the addresses of owners of good cabinets West or South, he is frequently able to buy worthy things at a reasonable figure for

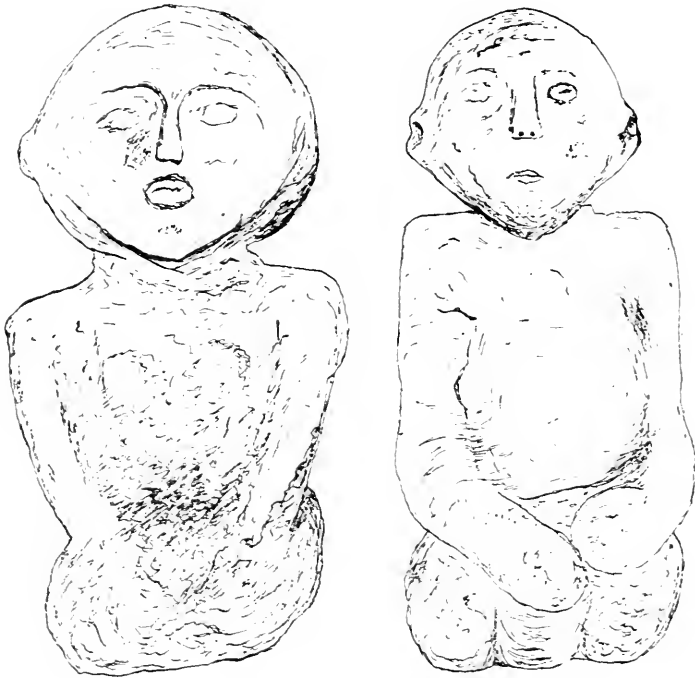


Fig. 263. S. about 1-7.

Two stone idols from Tennessee, Pogue & Pogue collection, Cincinnati. Five idols of different form were found in one burial place.

cash. What an advanced and experienced collector considers "duplicate" is often very acceptable to the beginner or the man of limited means. Among reliable collectors the word duplicate does not imply poor, broken objects. I would suggest the correspondence method to those who cannot leave home to collect. Every student who is able should spend his vacations in some good locality and personally collect. He will never regret a summer so spent. The collector who desires "something for nothing" will meet with the same ill success that men in business do who take that selfish motto to themselves.

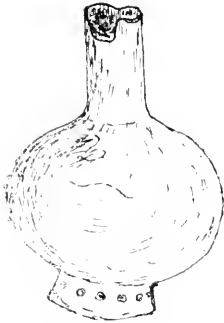


Fig. 264. S. 1-5.

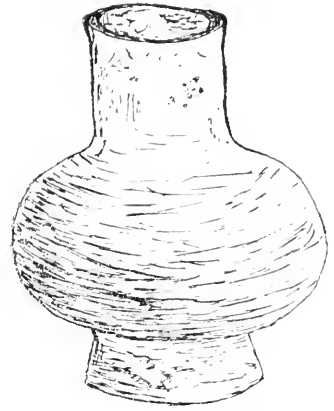


Fig. 265. S. 1-5

Arkansas mound pottery; Pogue & Pogue collection; Cincinnati.

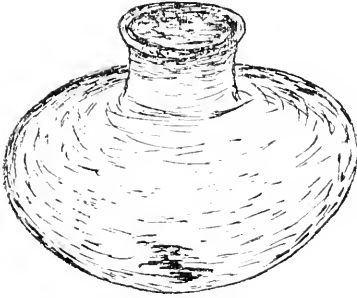


Fig. 266. S. 1-5.



Fig. 267. S. 1-5.

The pottery is like that from the Middle South illustrated elsewhere in this volume.

Fig. 264. A tall jar with enlarged base (perforated) and slender neck. These perforations are ornamental and are sometimes observed in the bases of pottery.

Fig. 265. Tall jar with enlarged base and thick neck.

Fig. 266. Typical urn or jar, with short neck and large body.

Fig. 267. Eating dish or bowl.

MARYLAND WEST VIRGINIA, VIRGINIA, ETC.

The upper Potomac, Kanawha and portions of states named above lie between the region described by Mr. Berlin and the Middle South. Many collectors residing there have written me and sent photographs or drawings. There is much published information, also.

Mr. Robert W. Gordon, of Cumberland, Maryland, has kindly furnished me with many facts regarding the Potomac valley and portions of the Virginias. I am sorry that I cannot reproduce his letter in full.

"Situated as Cumberland is, at the junction of the north branch of the Potomac (called Cohongoronto, by the Indians), and Will's Creek (or Caiueteucue) and at the eastern end of the great gorge, through the mountains known as The Narrows, it was especially adapted for a trading center, or the gathering place of large war parties. And the many evidences of camps along the river at narrow places, where it is overhung by beetling cliffs and the flakes and chips of flint, in large quantities, with broken and

unfinished arrow points, make certain the location of many a rude arsenal. Flint was not the only material used. Often, apparently, it was not to be had and then the hard Hamilton shales were used, and even fine grained sandstones for arrow-points. Some of the arrow-points found here have very good casts of brachiopods upon them, unmistakably proving their origin. Two of these ancient camps are located on the Potomac river, about three and four miles respectively below Cumberland, and for years rich have been the finds of arrow-points, in every stage of manufacture. Each of these camps was at a very narrow point, in the river, and on the side where the cliffs were high and almost unassailable. At such camps, no articles of domestic use are found. Their towns were situated, in the broad bottoms of the North and South Branches and Patterson's Creek, off of the main line of communication, and the rich loamy soils of these valleys are simply burial places for the numerous relics, which those who have taken an interest in such matters, have found in the past. The South Branch is particularly rich in relics. And the farmers in that valley have preserved many beautiful specimens. The arrows, scrapers, axes, pestles and spear-heads vary little from those found in other localities; they are of all kinds, all shapes and all sizes, and made of almost every kind of rock or stone. The axes are smoothly polished and many of them are really beautiful, in their proportions.

"Pieces of pottery are also found nearly all of it showing the marks of the basket bark, or willow work, in which it was moulded. One piece in my collection, a piece broken from the rim of a vessel, shows part of a hole, through which was undoubtedly passed a sinew or bark handle; probably used as a water vessel.

"In no department of their handiwork has so much skill or ingenuity been exhibited, as in their pipe making. They fashioned the most beautiful ones from serpentine. One, which was presented to me, evidently had been an accretion, formed around an orthoceras from the Hamilton strata. Part of this orthoceras has fallen out, leaving a small plug still in the lower, or small end of the accretion. The Indian who formed it had drilled a hole just above the part of the fossil remaining, and had secured a very durable and complete pipe. He had made no attempt to smooth the surface, for on one side of the nodule there still remains tightly adherent a small gastropod."

Many varieties of pipes are found, some of them being modern.

"From a mound which was opened at Petersburg, in Grant county, West Virginia, was taken a very fine serpentine pipe, with a flat base, monitor shape, and around the edge were notches not seemingly placed there for ornament, but I should judge as a tally of events, in the life of the owner. It may have been used as his calendar. There were 16 notches on the end, 7 on one side and 8 on the other. From the same mound was taken a paint mortar, which would hold about a gill and a half, made from Oriskany sandstone and in it still remains 2 paint balls, one of which had probably been made from hematite ore for the red paint, and the other

(black) from plumbago. The rock had evidently first been powdered, then mixed with oil ready for use and was probably kept in a putty condition. They are now as hard as bones. The mortar had a knob, on either side. Another made of the same material probably holds a pint and had the knobs, or protuberances, on either side. These may have been intended to enable the owner to get a better hold while grinding the paint.

"Shell disks from the size of a five-cent piece to six inches in diameter, made from the valve of some large lamellibranch are common. Large numbers of bone, shell and sandstone beads have been found and from the positions, in which they were discovered, with respect to the skeletons accompanying them, were used for necklaces and bracelets for wrists and ankles. Rubbing stones are quite common. A fine quoit has been found and a roller pestle 21½ inches in diameter and highly polished. As far as I have been able to make inquiry, only one ceremonial of bird shape has been found in this locality and that I have not seen."

THE LOWER POTOMAC, VIRGINIA, ETC., REGION.

In the Bureau of Ethnology Report for '93-'94, Professor Holmes had a paper of 152 pages, entitled "Stone Implements of the Potomac-Chesapeake Tidewater Province." Unquestionably, Professor Holmes is the most careful, thorough and competent of all American Archeologists. Beginning with the geologic features of the region, gravels, deposits and where boulders and other materials occur, he traces the evolution of the spear, arrow and axe-heads, from the raw material to the complete form. I recommend his paper to all students and collectors.

He also describes stone bowls, ornaments, pipes and all the other stone objects. I am indebted to Professors McGee and Holmes and the Bureau for permission to use some of the illustrations from their reports.

No good pottery is found here. The ornaments, pipes and ceremonials are rare. Aside from projectile points, axes, hammers, soapstone dishes, etc., there is little evidence of art. The tribes left enormous deposits of oyster and clam shells. Indeed, these continued with more or less regularity for many miles along the Potomac, Chesapeake, James, etc. In places the shell heaps are 5 or 6 feet in thickness. Where food was so easily obtained, it is natural that the natives would become shiftless and make no advancement in the arts.

The axes differ slightly from those described by Mr. Berlin or Professor Perkins. Professor Holmes says of them: "A broad distinction in shape is based on the manner of hafting.* In one group the groove extends entirely around the implement, while in another group one lateral edge is straight, being so arranged as to permit the wedging of the haft band. There are no specimens, however, varying so far from the type forms as to bridge the gap between types. The specimen seen in *a*, Fig. 268, is flat and rectangular in outline, with encircling groove in the middle; *b* is similar, but with the groove more shallow on one margin, and placed about one-third of the way from the top; *c* has a wide encircling groove near the top and a nar-

* Stone Implements of the Potomac, etc.

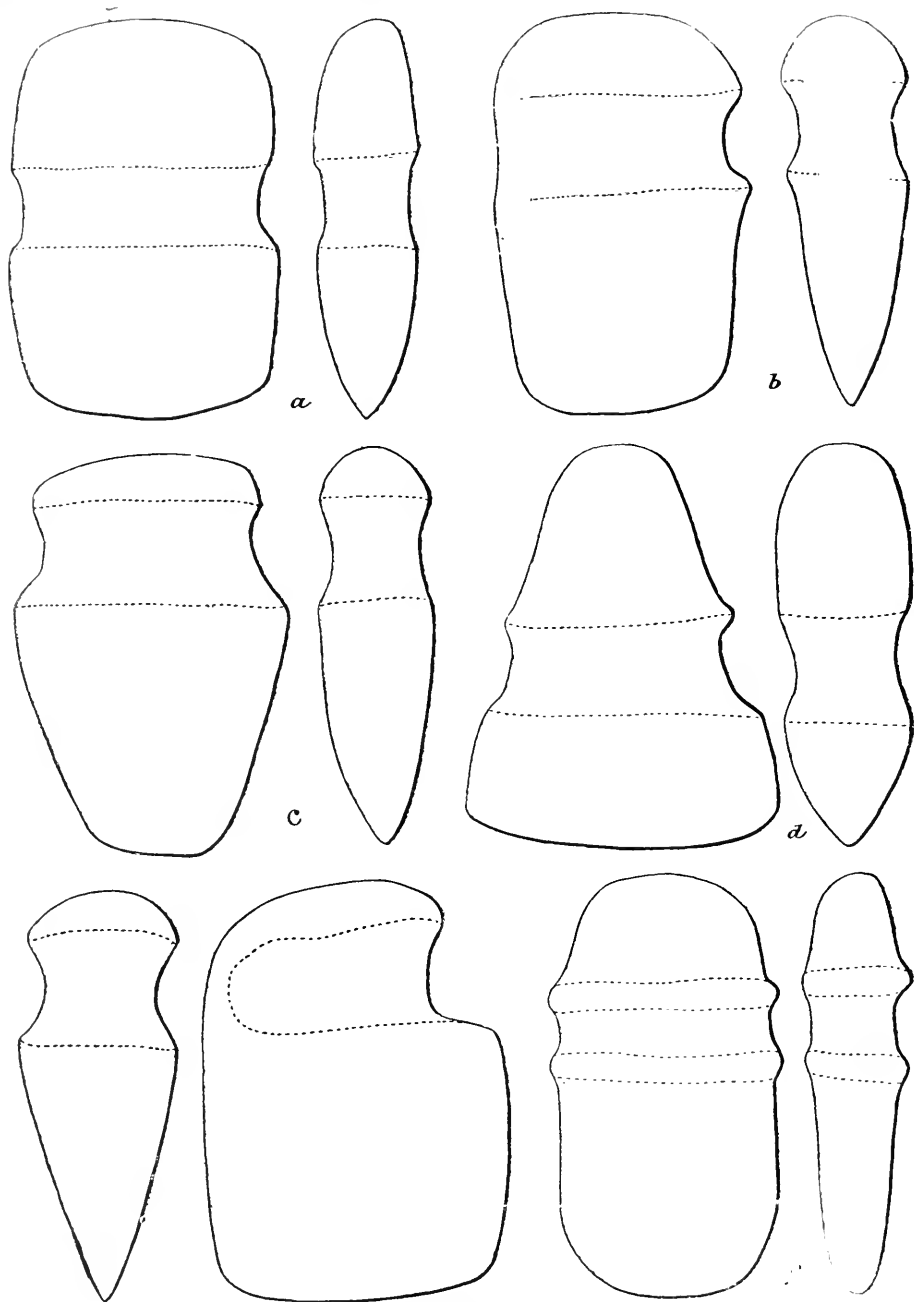


Fig. 268. S. 1-3.

rowing toward the point; *d* has the groove very low on the shaft and the blade is wide at the edge; *e* has one straight side for wedge hafting, and a wide projecting shoulder below the groove in the opposite edge; *f* has the groove bordered by low ridges all 'round.'

Fig. 268 might well stand for a North Carolina, District of Columbia, or Long Island, group. The tide-water points are quite similar, whether from Staten Island, or Charleston, Wilmington, or Raleigh.

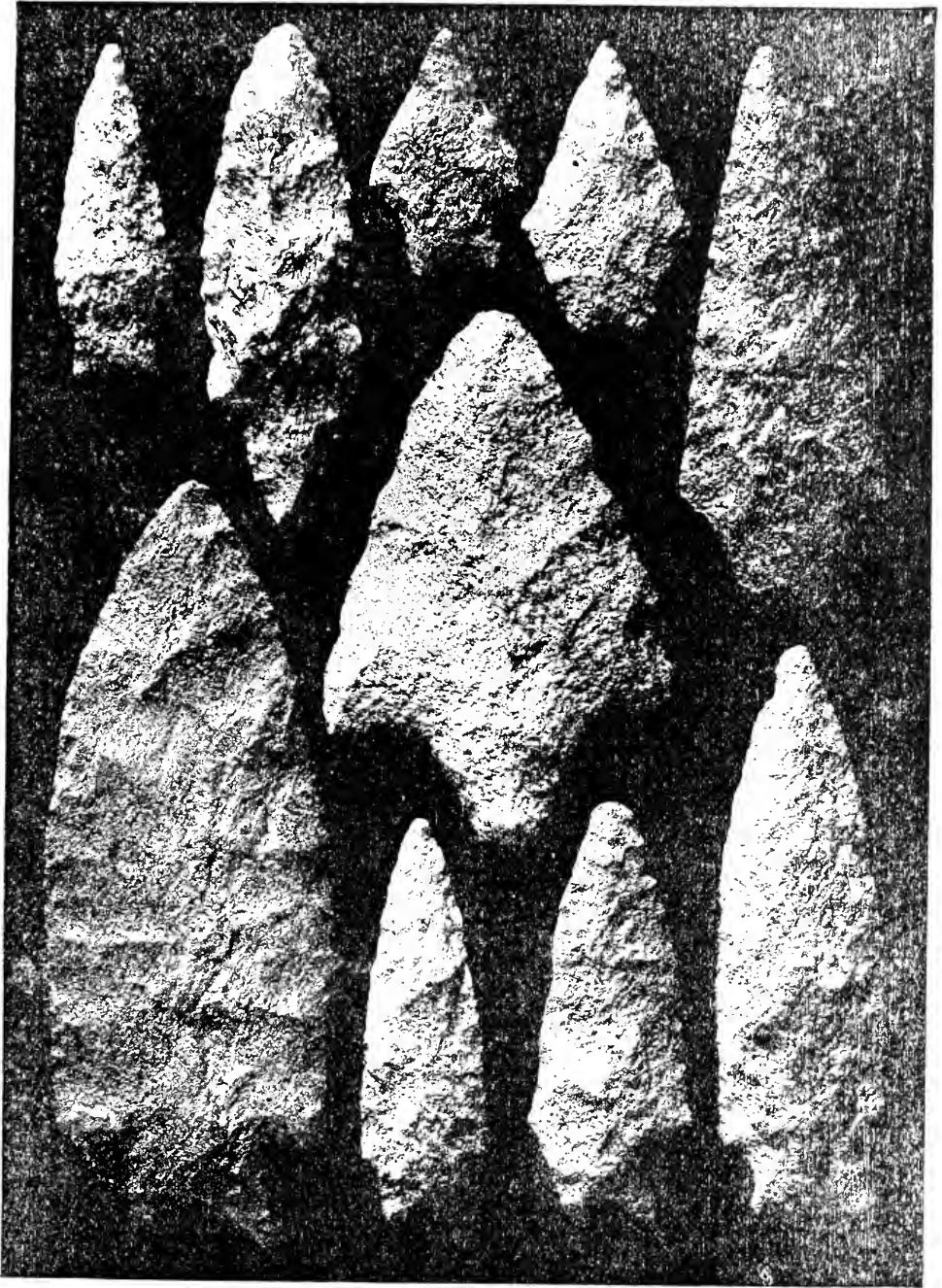


Fig. 269. S. 1-1.

Specialized quartzite blades from Potomac Village sites. These show the more common forms found along the coast from the mouth of the Hudson to North Carolina. Frieser Holmes says that this group includes nearly the full range of projectile points. He found many rough-notched axes all along the coast which were used in soapstone quarrying, as well as about the camps.

APPENDIX TO SECTION II.

MINNESOTA ARTIFACTS.

BY PROFESSOR T. H. LEWIS, ST. PAUL.

[After 150 pages of this book had been printed I received the following interesting paper. Rather than omit it, I insert it as an appendix to Sec. II. No one is more familiar with the upper Mississippi Valley than Professor Lewis.—W. K. M.]

Minnesota, comparatively speaking, is but little known, in so far as the artifacts of bygone ages are concerned; and but little has been written regarding the numerous prehistoric mounds, and still less about the stone objects. Mounds or other evidences of ancient occupancy are found in every county within the state. Ramsey, Hennepin, Wright, Goodhue and Winona, in the order named, are the banner counties for specimens; but there are others where the mounds are numerous, which may be equally good or even better.

Within the state there are over 100 collectors, with collections ranging from a score to 1500 specimens. One collector reports over 5,000 stone and chert artifacts collected in Minnesota and the two Dakotas. It is safe to estimate that there are from 12,000 to 15,000 Minnesota relics now owned by private individuals within the state, with perhaps 1,000 in the various institutions of learning, academies of science, etc. This does not include pottery sherds which some collectors have included in their statements of the number collected by them. Chipped implements of the various types are by far the most numerous, but others, made from stone, copper, hematite, slate, steatite, sea shells, bone and horn, are also found. The general classification is as follows:

STONE. Axes, ceremonial axes, adzes, chisels, celts, mauls, grooved and ungrooved hammers, sinkers, pestles (two forms), mullers, mortars, rollers, balls, pendants, disks, discoids, (with and without the perforation), rubbing stones, pipes, images, and a few other implements the use of which is not clear. Grooved hammers are fairly numerous, especially in the western part of the state, but the same cannot be said of the other implements. One form found in the southwestern part of the state is rare, it being long, with a very narrow diameter in proportion to its length.

COPPER. Axes or celts, chisels, spear and arrow-heads, knives, ice-choppers ("spuds" so called), awls, fish-hooks, ornaments and beads. While not very numerous, copper relics are scattered throughout the state. The notched base spear-head (knife?) similar to those found in the New England states (see Fig. 116, B) is also occasionally met with in this state; their being four of this class, all in different collections. There is also one of relatively the same shape in the museum of the University of Minnesota, which, instead of being notched, is better described as being scalloped. This is doubtless a rare form.

HEMATITE. Celts, pendants, plumbs and sinkers. These objects are but few in number, and are found mostly in the counties along the Mississippi river below the mouth of the Minnesota river.

SLATE. Pendants, pipes and ornamental stones. Relics of this material are scarce.

STEATITE. Pipes, ornamental stones and gorgets. These are also scarce.

SHELL. Awls, beads, pendants, pins (hair ornaments?), gorgets, earrings. Nearly all of these are of sea-shell or made from them, but a few are made from muscle shells. They are found in nearly all sections of the mound region, which embraces the major portion of the state; and in nearly every instance they have been obtained from the mounds, but few being found on the village sites.

BONE. Awls, chisels, beads, and blunt-ended implements, which are from two to five inches in length, the use of which is doubtful.

HORN. Awls, chisels, and harpoon-shaped implements. The latter are from six to eleven inches in length, and have from three to six barbs on one side only. Some are flattened at the top barb of from one-half to three-fourths of an inch in thickness, and they are from one and one-half to two inches in width at the same point, while others apparently have only the natural flatness of the original horn or antler; and all are finished implements. In every instance these have been found in building roadbeds and dams, or in ditching or excavating. All have the appearance of being very ancient, some being decayed to almost the consistency of chalk.

CHIPPED IMPLEMENTS. Arrow and spear-heads, awls, scrapers (with and without notched base), disks, knives, pendants, notched and unnotched hoes, and some other forms the use of which is problematical. Caches of leaf-shaped implements are occasionally found. The two largest (one containing 47 and the other 23 pieces) were unearthed within the city limits of St. Paul.

POTTERY.—Fragments are found in nearly every county in the state, and are composed of broken stone and clay, shell and clay, sand and clay, and occasionally of clay without any admixture. Fifteen whole (or nearly whole) vessels have been obtained, some of which were from mounds, while others were dug up from village sites. The pottery compares favorably with that found in the lower Mississippi valley. There are not many forms, and most of the vessels are small, only a few the size of a quart, and but a small proportion is painted or coated in colors. The decorations are also fairly made, and in some instances the etched work and smoothness of finish are not surpassed further south. But a small proportion is as rough as that manufactured by the Mandan, Gros Ventre and Arikaree Indians. Burned clay, mixed with grass and weed-stems, similar to that found in the southern States, is also met with in various parts of the state, but only in small quantities.

GENERALITIES.

Figs. 54, 56 and 87 can be duplicated in this state. Fig. 63, but in more perfect form, is found from Minnesota to Arkansas, inclusive, but in no great numbers. Prof. N. H. Winchell, of the State University, has one made from granular quartz, which must have been at least ten inches in

length, but the base is gone. There is a modified form, which is much narrower in proportion to the length; and another, which is broader and much more common; but they cannot be said to be prevailing types. The beveled knife shown in Fig. 96 is also found in the state, but they are generally narrower in proportion to their length than the one figured. The same forms are also found in the counties along the Missouri river below Kansas City.

The materials from which the chipped implements are made are many, and among them there may be recognized chert, quartz, granular quartz, moss agate, chalcedony, obsidian, slate and micaceous slate. Most of the materials here named are also represented by various colors and modifications. One material which has been described as obsidian, and which is well represented in various forms of implements, is doubtless, in nearly every instance, nodular flint; the nodules being found in the drifts. Twenty chipped implements of seemingly unusual materials or structures having been submitted to Prof. N. H. Winchell, state geologist of Minnesota, he gave, after a limited examination, the following classification: Silicified fossil wood, flint, quartzite, light pink quartzite, hematitic quartzite and ferruginous quartzite.

Grooved stone axes are found in nearly every part of the state, and vary in weight from a few ounces to fifteen pounds. The recognized forms are as follows, viz.: (1) Round head, with straight sides and square or rounded edge; (2) the same, with a very narrow bit as compared with the width at the groove; (3) practically the same as the first, but broader and having projecting ridges along the groove; (4) with the groove extending around the top, except on the side next to the handle, the surface of which may be either flat or concave; (5) those with nearly flat sides, edges and pole, and nearly square corners; (6) a similar one, but very long and narrow in proportion to their length; (7) another, lacking the usual groove around the head, but having a groove along the sides and over the pole. The latter are all heavy, weighing from ten to fifteen pounds. Axes having two grooves and those having notched sides are occasionally met with. Only the more radical types are here described, there being many intermediate forms.

PIPES. Nearly all the clay pipes have very thick stems, and the bowls are generally ornamented with incised lines or indentations, and occasionally by bosses. The monitor or platform pipes are small and few in number. The round and nearly square bowls, the so-called "ceremonial," and one similar to the tribal pipe of the Dakota Indians, but lacking the flange, is also found. Hammer pipes made from stone (see Fig. 86), and of about the same size as shown in the illustration, are found in this state and along the Missouri river from Stanton to old Fort A. Lincoln. It is possible that this form originated among the "house" Indians in the region mentioned along the Missouri; for it is here that the mauls and hammers are most abundant, and, while but few of the whole pipes have been found, many fragments of them have been.

SECTION VI.

THE EAST ALLEGHANY.

Mr. A. F. BERLIN, Allentown, Pa.

HABITAT.

Between the years 1500–1600 the Algonkin stock to which belonged the Lenni Lenape or Delaware tribe of Indians, occupied the Atlantic coast from the Savannah river on the south to the Strait of Belle Isle on the north. They were neighbors to the Eskimos, and some of their sub-tribes wandered as far west as the Rocky mountains. They surrounded on all sides the Iroquois, often called the Five or Six Nations, who with the Hurons from the west presented the finest type of the North American Indian family,* and who occupied the lake region of central New York, the valley of the Susquehanna river down through the state of Pennsylvania, along the eastern shore of Chesapeake bay into the southern part of the state of Maryland.†

It is a fact, well known to Anthropologists, that before the Indian occupied this geographical section, the Eskimo, now the most northern tribe of Indians, wandered over it as far south as North Carolina. We are told in a tradition of the Tuscarora Indians, who claimed that they arrived on the Virginia coast about the year 1300, that they found there a race who knew nothing of maize and were eaters of raw flesh. The Northmen in the year 1000, found the natives of Vinland, probably near Rhode Island, of the same race as those with whom they were familiar in Labrador.‡ Such implements as those Arctic people now use have frequently been picked up in the northern part of the state of New York|| and elsewhere on the Atlantic coast.

Than this, to the red people, there was no more attractive section. The northern part contained many large and small lakes. In every direction flowed large and small streams, while copious springs everywhere dotted the surface. The central and southern portions, with the exception of lakes, were equally well watered and the Atlantic ocean for miles bathed its shores. Forests covered the ground for miles, and game was plentiful in every section. East of the Alleghanies, in the valleys of the Delaware, the Potomac and the Hudson, throughout the swamps and forests of Virginia and the Carolinas, their osier cabins and palisadoed strongholds, their maize fields and work-shops of stone implements, were numerous. §

*Antiquities of Tennessee. Thruston. Page 12.

†The Lenape and Their Legends. Brinton. Pages 13-14.

‡The Myths of the New World. Foot note, page 23. Brinton.

||Aboriginal Chipped Stone Implements of New York. Page 11. William M. Beauchamp.

§The Lenape and Their Legends. Page 10. Brinton.

MATERIAL.

With the exception of numerous imported implements, or those brought from distant sections and made from obsidian, or volcanic lava, etc., of which more will be said hereafter, the materials from which stone tools were made by the aboriginal people, were nearly always found in place. Especially so may this be said of those implements found in eastern Pennsylvania. Here abounds in inexhaustible quantity jasper* of many colors which played so important a part in the manufacture of their various tools. Chalcedony or hornstone, quartz, quartzite, argillite and fine grained sandstone, all of which could be nicely chipped.

In all the principal valleys draining from the west into Chesapeake Bay, was found in broken off masses, often reduced to cobble-stones, quartz and quartzite which were brought by erosive agency from heavy strata in the mountainous regions of the Northwest. Later they were exposed along the bluffs by the elements to the view of the Indians who made use of them to excellent advantage. The many quarry sites found in the above valleys substantiate this fact. On those sites along rivers more fully occupied, arrow and spear-heads are found in so great quantities as to seem almost inexhaustible.

Steatite or soapstone is a tough massive rock found in formations of gneiss, seldom detached from the mother rock. It was extensively quarried in Indian times in Pennsylvania, Maryland and Virginia. Outcrops of this rock have been worked extensively by the aborigines in many other states. It was used by the natives in the manufacture of different forms of vessels, pipes, ornaments, beads, ceremonial weapons and other objects.

Rhyolite an igneous, brittle, slaty rock found in South Mountain, which extends from the southern side of the Susquehanna River at Harrisburg, Pennsylvania, to near the Potomac River at Harper's Ferry, West Virginia, was extensively used by the Indians of the lower Susquehanna Valley and Tide Water region in manufacturing many of their flaked implements. Quarries of this material were first discovered in the above mountain by Mr. William H. Holmes, an archaeologist of note, at Maria Furnace, Pennsylvania, on a branch of the Monocacy 10 miles south-west of Gettysburg. The quarries examined here, as indicated by their refuse, show that blade-making was the almost exclusive work of the shops. These transported to distant places were then worked into such tools as desired by their maker. The colors of rhyolite are generally bluish-gray, sometimes of a purplish hue, and often banded and mottled. Dark varieties closely resemble slate. It is generally flecked with light colored crystals of feldspar, by which character it is easily recognized. On account of a shaly structure its fracture is

*The cabinet of archaeological objects owned by J. D. McGuire, Ellicott, Maryland, contains a number of flaked specimens of jasper, dark-green in color, the origin of which is unknown. For interesting information relating to material and implements once used by the red people in the region drained by Chesapeake bay the writer is indebted to the valuable production entitled *Stone Implements of the Potomac-Chesapeake Tidewater Province*, by William Henry Holmes. 15th Annual Report of the Bureau of Ethnology. 1893-'94. Washington, D. C.

often uncertain. Mr. Holmes tells us in his excellent production, page 73, that at least one quarter of the implements found in the Tide Water region were made of this gray slaty stone.

In the collection of Dr. T. B. Stewart, Lock Haven, Pennsylvania, are a number of nicely wrought implements of this material. This town near which they were found is distant, as the crow flies, from its south-eastern source, 110 miles. In the writer's collection is a finely flaked rhyolite leaf-shaped knife, four and one-quarter inches long, found near Weatherly, Pennsylvania. This town is distant in a straight line, from the same source 123 miles. Thus are similarly scattered, implements of this rock over the northern parts of Pennsylvania, as are jasper and argillite over the tide water region. Implements of argillite in blade form from the valley of the Delaware 150 miles to the North, and jasper from the Lehigh Hills, 120 miles away in the same direction are also found associated with rhyolite specimens.

Diorite or greenstone, serpentine and other tough porphyritic stones from which were manufactured polished and pecked cutting and scraping tools, often ceremonial weapons and ornaments, similarly treated, are also found here. The softer minerals called shale, and slate from which the greater number of polished ceremonial weapons and ornaments were formed are here too found in place. Slate was also sometimes used in making arrow and spear-heads.

In his very interesting and entertaining bulletin in No. 16, the Rev. Mr. Beauchamp tells us that most of the material for the finer arrows, knives and spears came from without the state. Among these implements occur jaspers of every hue, white quartz, chalcedony, argillite, schist and sandstone, as well as the finer flints of bluish or brownish gray. Yellow jasper was a favorite material, especially for large implements, and it is comparatively frequent in caches. It was probably brought from another state.*

Every material mentioned above occurs in the Lehigh Hills in eastern Pennsylvania which are nearly one half pure quartz, and the different strata, where exposed, afforded the Amerind an abundance of material for the manufacture of his implements.

From these hills, extending from the valley of the Delaware river near Riegelsville, Pennsylvania, in a south-west direction to Reading, Pennsylvania, in the Schuylkill valley, was quarried the jasper which was transported in nodules and blades, hundreds of miles. From Rattlesnake Hill† to the vicinity of Reading, at different stations, have been found many depressions from which was taken this, to the Indian, valuable material. At the suggestion of the author, who had for some time known of the sixty depressions at Vera Cruz, and the one hundred and thirty-eight at Macungie in Lehigh county, Pennsylvania, Mr. H. C. Mercer made a scientific examination of them. An old stump with 195 rings at the side of a pit at Vera

*Aboriginal Chipped Stone Implements of New York. Vol. 4, page 13.

†These depressions, nine in number, were first known to Mr. Charles Laubach, of Riegelsville.

Cruz, and a tree nearly four feet in diameter at Macungie indicate that work in these two shafts was abandoned in about 1680-'90*. In excavating one of the depressions so plentiful at Macungie, Mr. Mercer found lying on the unworked clay, at a depth of eighteen and one-half feet, a large disc-shaped implement of limestone, a foot in diameter and well worn on its cutting edge. At the fourteenth foot, among the refuse, a smaller tool, similarly worn, of quartzite, and a rude limestone point, were found, while at the bottom two cavities in the clay produced, on pouring in plaster of Paris, the fac-similes of two sharpened wooden billets, which had long since rotted away and had left only their moulds. One was about six inches in diameter and of unknown length, as the upper part was destroyed in digging. The other with a diameter of about two inches was two and one-half to three feet long.† These unique digging tools now rest in the Museum of American Archaeology, belonging to the University of Pennsylvania, Philadelphia.

The origin of argillite from which so many of the paleoliths or "turtle backs" were made and which was also much used in making the smaller flaked tools, was for a long time unknown, and it remained for that indefatigable explorer and archaeological authority just mentioned to find it in place. In the month of May, 1893, while exploring on the banks of the Delaware river at Point Pleasant, Pennsylvania, Mr. Mercer discovered argillite quarries on the bluff a short distance from the river, consisting as he then wrote the author, of eight or nine holes and tons of chips. Thirty-three turtle-backs were taken out of a depression four feet deep and four feet in diameter, about one to every bushel of chips.‡

PALEOLITHS OR RUDE STONE IMPLEMENTS.

Lying side by side with the finely chipped flints are rudely made implements of leaf-shaped form, flat on one side, ridged from end to end on the other, and because of this peculiarity they are termed "turtle-backs." They first gained prominence through the prolific archaeological writer, Dr. C. C. Abbott, who discovered them in the glacial drift at various depths in the steep banks of the Delaware river not far from Trenton, New Jersey. Since they have the form of the paleolithic or rude flint implements found with remains of extinct animals in the river drifts of Europe, and since they were made by a savage people contemporaneous with these animals, he came to the conclusion after careful examination of the places where he discovered these interesting objects; that they too were made by a race of men, low in the status of civilization; and who lived in this valley during the melting of the glaciers, the waters of which hurled down their debris and man's implements toward Delaware bay, the head of which then was where now stands the above mentioned city. While no archaeologist questions the statement that man existed during that cold and awful period, there are those who dispute the claim that the so-called paleoliths or turtle-backs were

*The American Anthropologist. Vol. VIII. Page 80.

†Ibid. Page 84.

‡The Archaeologist. Editorial. Vol. I, page 113.

made by man, and insist that they are the Indian's unfinished implements or rejects. They are found in this country wherever roamed prehistoric man. By no means are they an attractive implement, but they are of enough interest to hold a place in the cabinet of every scientific archaeologist and collector. The large archaeological museums own fine cabinets of them. Those found in the Delaware valley are made from sand-stone and argillite, while in other sections, jasper, quartzite and other silicious material was used. The discoveries in Europe were for a long time regarded with distrust, and their finder regarded as "daft," but later and careful examinations made of the places by learned geologists proved them to be authentic. Here, time alone will tell whether they are the remains of a people who lived in North America when the greater part of it was covered with a veil of ice and snow hundreds of feet in thickness.

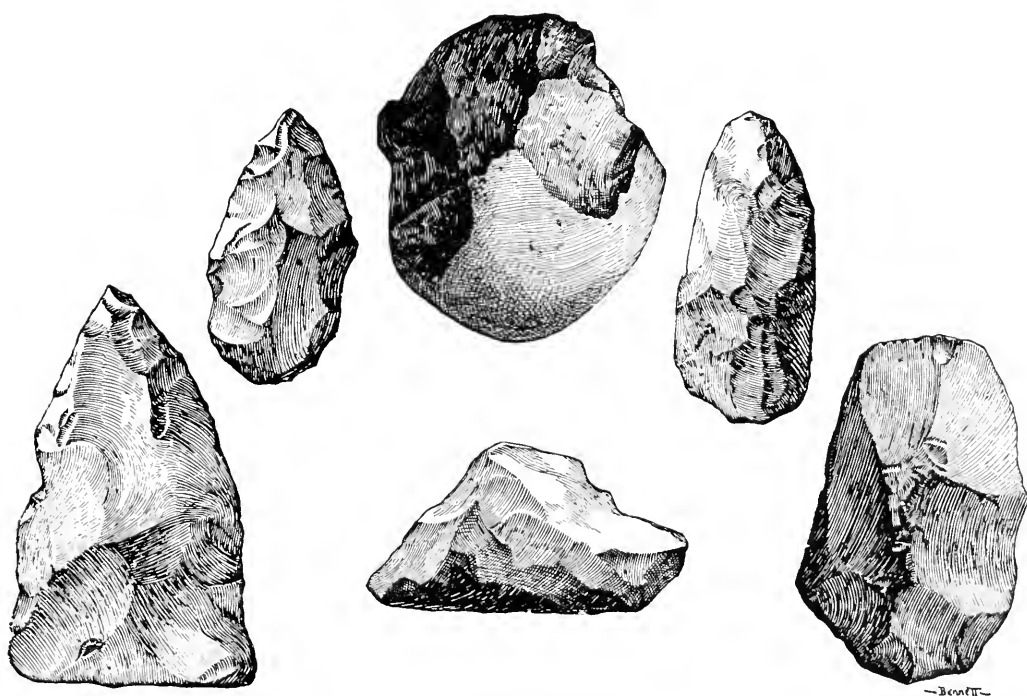


Fig. 270.

In the annexed cut are shown a series of paleoliths from different parts of the United States. The lower implement to the right is made of argillite, and was found in the glacial gravel deposits at Trenton, New Jersey. The largest implement shown in the upper line was taken from aqueous gravels near Wilmington, Delaware.*

CORES AND FLAKES.

Cores are blocks or small boulders of flinty stone from which were forced by pressure, or with a single, sudden blow, thin flakes from which were fashioned arrow-heads, scrapers and other small chipped tools. Those

*Primitive Man in Ohio, opposite p. 2. Moorehead.

found here are of small size and the writer has seen none that would form a flake four inches long. The material used is of such a nature that long flakes could not be produced.

The finest cores, and flakes formed by pressure, are found in the United States and Mexico in obsidian or volcanic glass districts. This material breaks like the cretaceous flint of Europe, where flakes have been found a foot and more long, and is therefore similar in form to the Neolithic flint knives found in Western Europe.* The Aztecs, who knew well how to work obsidian, had workmen who made knives of obsidian in a wonderful and admirable manner and the ingenuity which invented this art is much to be praised. "The Indian workman seats himself upon the ground and takes

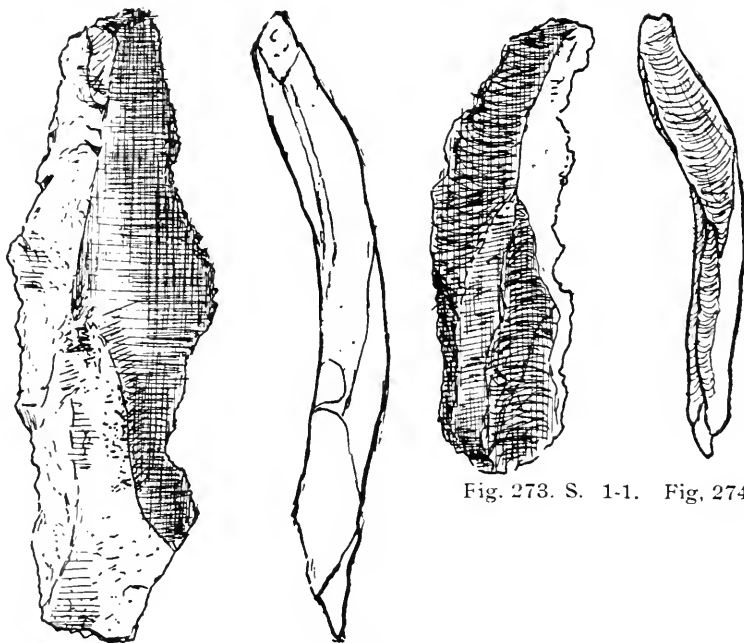


Fig. 273. S. 1-1. Fig. 274.

Fig. 271. S. 1-1. Fig. 272.

a piece of this black stone which is more beautiful and brilliant than alabaster or jasper, so much so, that of it are made tablets or mirrors. The piece they take is about 8 inches long, or rather more, and as thick as one's leg, or rather less, and cylindrical; they have a stick as large as the shaft of a lance, and 3 cubits or rather more in length, and at the end of it they fasten firmly another piece of wood 8 inches long, to give more weight to this part; then pressing their naked feet together, they hold the stone as with a pair of pincers, or the vice of a carpenter's bench. They take the stick which is cut smooth at the end with both hands, and set it well home against the edge of the front of the stone, which is also cut smooth in that part; and then they press it against their breast, and with the force of the pressure there flies off a knife, with its point and edge on one side, as neatly as if one were to make them of a turnip with a sharp knife. Then they

*Smithsonian Contributions to Knowledge, No. 287, p. 8. Rau.

sharpen it on a stone, using a hone to give it a very fine edge; and in a very short time these workmen will make more than twenty knives in this manner. They have a ridge up the middle and have a slight graceful curve towards the point."* In western Europe they have been found measuring $13\frac{1}{2}$ inches in length.

The Aztecs made razors from obsidian flakes, and also in war used an implement made from a stout piece of wood $3\frac{1}{2}$ feet long and about 4 inches broad, on each side of which was fastened with gum very sharp flakes of this volcanic material about 3 inches long, 1 or 2 inches broad, and as thick as the blade of the invading Spanish swords. So keen of edge was this weapon that once in the hand of an attacking Aztec Indian, it entirely beheaded his Spanish adversary's horse. The first stroke was only to be feared for the razors soon became blunt.†

Two very fine flakes, the larger of spotted yellow jasper are shown in Figs 271 and 273 in full and side views. The larger measures in length $3\frac{3}{8}$ inches. On the upper end of it, in Fig. 272, can be seen the bulb of percussion caused by a single sudden blow. This interesting feature is evident in many flaked implements. The smaller flake also of yellow jasper is $2\frac{3}{8}$ inches long. It is partly chipped along its edges, and may have served as a knife. Both of these specimens were found at the large jasper quarries at Macungie, Pa. and are owned by Prof. J. R. Merkel at Muhlenburg College, Allentown, Pa.

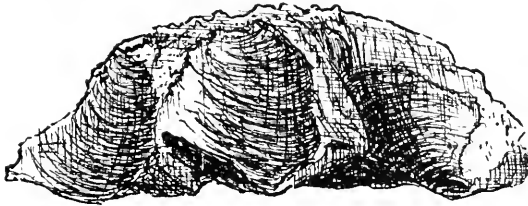


Fig. 275 is a core of dense red jasper $2\frac{3}{4}$ inches long, from which a number of small flakes have been struck. It was found at Allentown, Pa. and belongs to the writer.

FLAKED IMPLEMENTS.—ARROW HEADS.

No implement used by the Amerind is so plentiful as the so-called arrow-head. It is found where in deadly feud one hostile tribe was arrayed against another in plowed fields, along the banks of flowing streams; on the shores of lakes and other large bodies of water, around once copious springs and wherever in quest of sustenance the Indian hunter wandered. Mounds, graves and shell heaps too have produced many.

Quickly made and their loss a continual occurrence one can easily understand why found in so great abundance. Although frequently beautifully chipped into graceful form it is more often found flaked in a rude and bungling manner. This is obvious from the fact that the material used in the manufacture of their chipped implements was often of a texture which did not allow fine and artistic work. Not every Indian was an adept in the production of chipped implements. There were men who did no other work

*Prehistoric Times. Lubbock, pp. 89-90-91, who quotes from the Spanish writer Torquemada.

†History of Mexico, bk. VII, p. 367, Clavigero.

but manufacture this sort of ware. It is a well attested fact according to an Ojibway tradition, that there was a class of men among the northern tribes who were called makers of arrow-heads.

It is said that, among the Indians of Cherokee, Georgia, in ancient times, were men who devoted their attention to the manufacture of spear and arrow-heads, and other stone implements. As from time to time they accumulated a supply, they would leave their mountain homes and visit the sea-board and intermediate regions for the purpose of exchanging these implements for shells and various articles not readily obtainable in the localities where they resided. These were usually old men or persons who mingled not in the excitements of war and the chase. To them, while engaged in these commercial pursuits free passage was at all times granted. Their avocation was deemed honorable, and they themselves were welcome wherever they appeared. The finding of many chipped implements, the material of which is foreign to this geographical section, is conclusive



Fig. 276. 1-1.

evidence that in times prehistoric there was carried on an extensive aboriginal trade, if not one of peace, then by the more forcible one of conquest, in which the victor took from the vanquished that which appeared to him useful or ornamental. This practice prevailed in North America, before that part of the New World was settled by Europeans; and the subject of primitive commerce is of particular interest because it sheds additional light on the conditions of life among by-gone races. The fact that such a trade was carried on is proved, beyond any doubt, by the frequent occurrence of Indian manufactures consisting of materials which were evidently obtained from distant localities. In many cases however these manufactures may have been brought as booty, and not by trade, to the places where they are found in our days. The modern Indians, it is well known, sometimes undertook expeditions of 1000 or 1200 miles, in order to attack their enemies. The war-like Iroquois, for example, who inhabited the present state of New York frequently followed the war-path as far west as the Mississippi river.* Knives of obsidian write Squeir and Davis were taken from mounds in the Mississippi valley,† and Dr. C. C. Abbott tells us that obsidian, in the form of arrow points, which were always broken, have been picked up in New Jersey.‡

*Ancient Aboriginal Trade in North America, Charles Rau, Smithsonian Report 1872, p. 348.

†Ancient Monuments, Miss. Valley, p. 215.

‡Stone Age in New Jersey, Smithsonian Report 1875, p. 303.

The collection of Mr. Justin V. Nilis, of Edgemere, Pa., contains a fine, perfect triangular flaked implement of blue translucent obsidian, a figure of which is here shown, which was found a number of years ago while clearing a field near Niehecronk Lake, Pike County, Eastern Penna.

The writer owns a very pretty obsidian knife, now on deposit in the Archaeological museum of the University of Pennsylvania, Philadelphia, which was taken from the Tennessee river. In the collection of Mr. D. S. Kern, Allentown, Penn., is a little leaf-shaped knife found on the surface seven miles north of this city made from agatized wood. Both this material and obsidian are found only in the territories, the upper Missouri river and Mexico.

The traveller Carver was told by the Winnebago Indians, who then lived in what is now the state of Wisconsin, that they sometimes made war-excursions to the south-western parts,—then Spanish possessions,—and that it required months to arrive there.* The Indian propelled his arrow-tipped shaft with wonderful force and exactness. So strong were these Red people, and so dexterous in the manipulation of their bows, which we are told were as thick as a man's arm, about eleven or twelve spans in length, that they could project their arrows a distance of two hundred paces.†

The Spaniards under the adventurer De Soto experienced this to their sorrow while arrayed in battle against them. Their armor was pierced by these small points and many of them were wounded and killed, the arrows passing completely through their bodies. At the battle of Manilla two hundred Spaniards were killed; of the remaining living one hundred and fifty received seven hundred wounds. Cabeza de Vaca, a Spanish writer, who accompanied this unfortunate expedition tells us that he saw the butt of an elm tree which had been penetrated by an arrow the depth of a span.

Among other instances he mentions that of an arrow shot by an Indian which pierced through the saddle and housings and penetrated one-third of its length into the body of a Spaniard's horse.

So proficient in archery, says Clavigero in his *History of Mexico*, were the Aztecs at the time of the invasion by the Spanish adventurer Cortes, that it was usual for a number of archers to assemble and throw up an ear of maize into the air, at which they immediately shot with such quickness and dexterity, that before it could reach the ground it was stripped of every grain.‡

The chevalier Tonti, who travelled in the now western part of the United States two hundred years ago, alluding to the force with which the aborigines projected their arrows says: "That which is wonderful in this, is the havoc which the shot sent by the savages makes; for, besides the exactness and swiftness of the stroke, the force of it is very surprising, and so much the rarer, because it is nothing else but a stone, or a bone, or sometimes a piece of very hard wood pointed and fastened to the end of an arrow with some fishes-glue, that causes this terrible effect.

*Carver. *Travels, etc.*, Harper's Reprint, New York 1838, p. 42.

†Carver. *Travels, etc.*, Harper's Reprint, New York 1838, p. 42.

‡Life of Hernan lo Cortes, Arthur Helps, Vol. 1, foot-note, p. 76.

"When the savages go to war, they poison the point or extremity of their dart so that if that remains in the body death follows of necessity; the only remedy in this case is to draw out the arrow through the other side of the wound, if it goes quite through; or if not, to make an apperture on the other side, and so to draw it through; after which they know by instinct certain herbs the application of which both draws out the venom and cures them."* Wah-na-tah, a Dakota chief it is said on one occasion sent an arrow with such force after a female buffalo that it passed entirely through her body, and killed her calf on the other side.†

The late Dr. Walter J. Hoffman, an anthropological writer, of note, and during life an intimate friend of the writer, while a surgeon in 1873 under General Custer saw a Sioux Indian drive an arrow clear through a buffalo. He also asserted that in the command there was not a man who was strong enough to draw to its full length an Indian bow.

In the magnificent archaeological collection of Mr. H. K. Deisher, Kutztown, Penna., is to be seen a dorsal vertebra of a buffalo through which a hoop-iron arrow-head has penetrated the point projecting on the other side a quarter of an inch. A figure of this interesting specimen is shown here. It was found near St. Joseph, Missouri, about 1878.

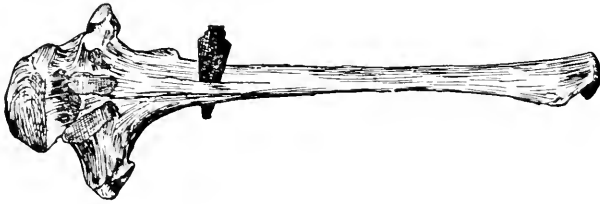


Fig. 277.

Flaked implements were made both by percussion and pressure, sometimes aided by heat, and many interesting accounts are given in various works by writers who saw the Indians make them. While numerous flaked or chipped implements clearly indicate their use it is impossible to classify correctly the greater part of them. Many small objects classed as arrows may have served as cutting tools. These fastened in short wooden handles with pitch or asphaltum were in use a decade ago by Indians then living in the territories. A very fine series of these interesting knives still fastened to their handles which would also have served well as spear-heads or arrow-points, are shown in Vol. VII of the Wheeler survey on plate 4, opposite page 60. They were all found off the coast of California.‡

A comprehensive and practical classification of chipped implements has been attempted by Dr. Thomas Wilson, curator of the archaeological section of the U. S. National Museum at Washington, D. C. The specimens in that collection he divides into four grand divisions according to forms al-

*Antiquities of the Southern Indians, C. C. Jones, pp. 245-46-48-49-59.

†Archives of Aboriginal Knowledge, Schoolcraft, Vol. IV, pp. 95-6, Phila., 1860.

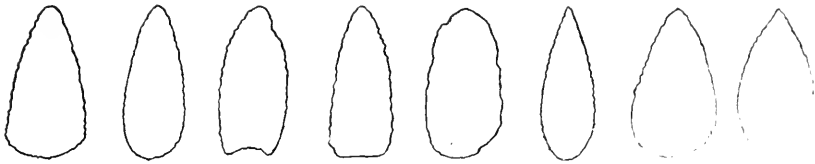
‡In this valuable work Dr. C. C. Abbott has written very entertainingly on chipped stone implements.

ready well known and separated.* Each one of these primary divisions is classified into a number of subdivisions which are here shown. Division I, leaf-shaped. In this classification the leaf-shaped is placed at the head as being the oldest implement of its kind. This division includes all kinds: elliptical, oval, oblong, or lanceolate forms bearing any relation to the shape of a leaf, and without stem, shoulder or barb. Class A, is pointed at both ends. The widest place one-third, or one-fourth from the base.

DIVISION I.



Class A. Fig. 278.



Class B. Fig. 279.

Class B, is more oval, less pointed and with base concave, straight, or convex.



Class C. Fig. 280.

Class C, is long and narrow, with sharp points, parallel edges, and the bases are concave, straight, or convex. These belong to the Pacific coast.

DIVISION II.

Division II, triangular. This division includes all specimens which, according to geometrical nomenclature, are in the form of a triangle; whether the bases or edges be convex, straight or concave. They are without stems and consequently without shoulders, though in some specimens the extreme concavity of the base produces barbs when the arrow shaft is attached.



Fig. 281.

*Arrow-points, Spear-heads, and Knives of Prehistoric Times, Annual Rep. of the Smithsonian Institution, U. S. National Museum, 1897.

DIVISION III.

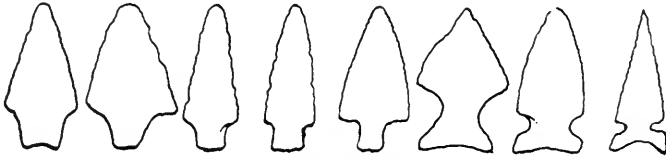
Division III, stemmed. This division includes all varieties of stems, whether straight, pointed, or expanding, round or flat, except those with certain peculiarities and included in Division IV; and whether the bases or edges are convex, straight or concave.

Class A is lozenge-shaped, not shouldered or barbed.



Class A. Fig. 282.

Class B, is shouldered, but not barbed.



Class B. Fig. 283.

Class C, is shouldered and barbed. These Mr. Wilson says, "cover the commoner forms of arrow-points and spear-heads throughout the world. Certain other forms, few in number, or restricted in locality, and scarcely entitled to divisions by themselves, are nevertheless found in sufficient numbers and with such definite characteristics that they cannot be ignored. These he has placed in a general class under the head of "peculiar forms."



Class C. Fig. 284.

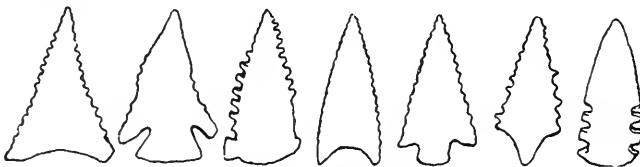
DIVISION IV. Peculiar forms.

Class A, beveled edges.



Class A. Fig. 285.

Class B, serrated edges.

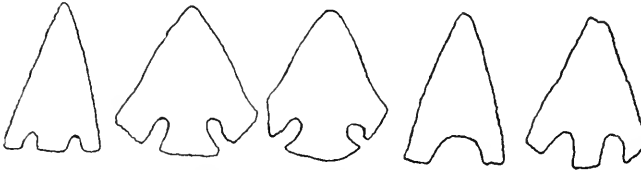


Class B. Fig. 286.

Class C, bifurcated stems.



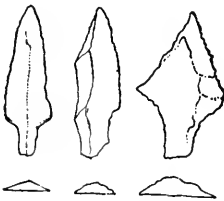
Class C. Fig. 287.



Class D. Fig. 288.

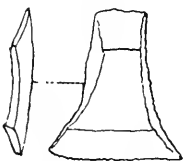
Class D, long barbs, square at ends. Peculiar to England, Ireland, and found in Georgia, in the United States. "Our interest in this class," says Dr. Wilson in his admirable work

from which the author quotes so liberally, "arises from the fact that, while they are confined to restricted localities in Europe as mentioned, they should have appeared in America in an equally circumscribed area, namely, the state of Georgia," An elegant specimen similar to the second shown in Class D, with a straight stem is shown by Sir John Evans as Fig. 318* It was found in a sepulchral mound at Rudstone, England, in front of the face of an unburnt body. The base of the barbs which are as long as its stem are chipped almost straight forming a sharp point on the inner side of the barb. In Europe they are assigned by archaeologists to the first epoch of the Bronze period.



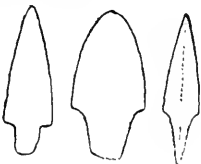
Class E. Fig. 289.

Peculiar to the province of Chiriqui, Panama. These are thin and narrow rude flakes struck from nuclei and left nearly in their original condition except that a rude stem has been chipped, and where necessary they have been brought to a point, "as the material from which they are made is hard and refractory. The workmanship is rude."



Class F. Fig. 290.

Broadest at cutting end and chisel-shaped. "They are thin, almost flake like in appearance, not made pointed, nor are the edges worked down by secondary chipping. The cutting edge is at the front, at the broadest end, and, thus propelled, will make a wound large enough for the arrow shaft to follow. It is a question whether these small flint objects were really the points of arrows. Several of them found in France and other parts of Europe were fastened in short handles, and may have served as knives. A cache containing several thousand specimens was found and is now on exhibition in the Museum of Antiquities at Copenhagen, Denmark. They may have served for different purposes, just as our varied flaked tools did in this country.



Polished slate. Peculiar in North America to the Eskimo country and to New England, New York and Pennsylvania.

Fig. 291.

*Ancient Stone Implements of Great Britain p. 343.

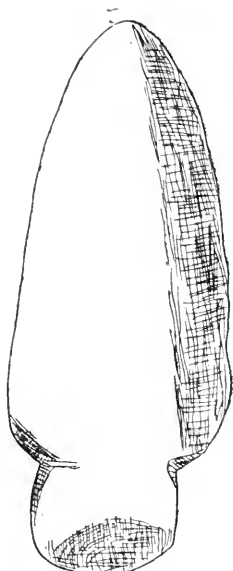


Fig. 292.



Fig. 293.

Polished slate spear-head or arrow-head shaped implements are very rarely found in Pennsylvania. In Figs. 292-3 are shown two. The larger is beveled to the right, a peculiarity seldom noticed in this material. It was once fastened to the handle. This is shown by the two small grooves which were worn into the upper part of the stem as shown in the figure. It was found on the surface near Allentown, Pa. The smaller specimen was found in Schuylkill County, Pa. Both belong to the writer. In the State of New York are found specimens of similar form, sometimes barbed, and often with notched stems which are called by Mr. Beauchamp double-edged slate knives. Of these he writes in his reports*

"Without discussing this question at length, it may suffice to say that these two forms of knives are in present use among the Eskimo, and that that people lived on the Gulf of St. Lawrence 300 years ago, whence, at a still earlier day, it would have been easy for them to make hunting excursions into New York by water. Certain it is that south of New York one of these articles, the lunar shape or half circular knife, has never been found,† and the other but rarely. * * In fact here they are rarely found far away from the larger lakes and streams tributary to the St. Lawrence."

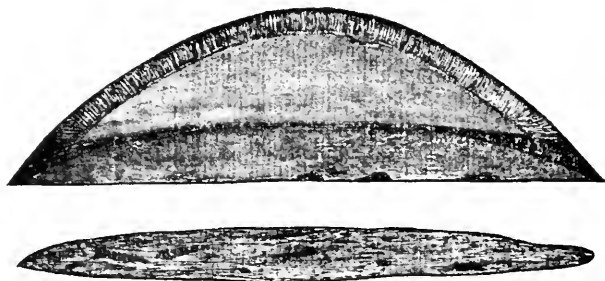


Fig. 294 and cross section of same. This semi-lunar knife is from New England, but it will serve to illustrate the Pennsylvania forms.

*Polished Stone Articles used by the New York Aborigines, William M. Beauchamp, S. T. D.; Bul. 4, pp. 64-5.

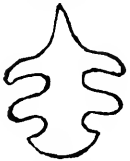
†Mr. Beauchamp errs; Dr. Charles Rau, in *Prehistoric Fishing*, p. 185, shows a lunar shaped knife $\frac{1}{2}$ size, Fig. 332 which was found on the bank of the Schuylkill river near Norristown, Pa. Another obtained by the writer now in the Smithsonian, was found near a large creek five miles north of Allentown, Pa. The half of another and similar specimen was found on the bank of the north branch of the Susquehanna near Williamsport, Pa. I do not know where it now is.



Class H, a unsymmetric, or in other words, "lopsided." This peculiarity apparently destroys their affectiveness as a projectile. It is suggested that fastened to a short handle the concave part may have been used for scraping purposes, and the convex edge as a knife. Of this class Fig. 295 of jasper, belongs to Mr. Deisher, and the pronounced perfect specimen of brown jasper shown as Fig. 296 is owned by Mr. E. J. Sellers, of Kuntztown, Pa.



Two very rare forms of flaked implements are here shown as Fig. 297-8. They are made of jasper and nicely flaked. Both were found in the Lehigh Valley near Allentown, Pa. The perfect one is owned by Mr. Austin E Brush, of this city, and the other by the writer, who owns about twenty perfect specimens, the finest of which are now on deposit in the museum of the University of Pennsylvania. The three points mentioned here were all found in the territory over which wandered the Lemmi Lenape or Delaware Indians and some of them were undoubtedly the makers. About one hundred of them are shown by collectors in this vicinity, and all are made of jasper of various colors.



Class I. Fig. 299.

Curious forms, found not alone in the United States, but in England, France, Switzerland and rarely in Italy.



Fig 300 represents a curious form similar to that of a shark's tooth. It may have been used for drilling purpose.

The existence of fossil-shark's teeth was known to some of the southern Indians, who sometimes perforated and wore them as ornaments around their necks. They have been taken from earth mounds on the coast.* Col. Jones appears to think that the triangular form of arrow-head was the primary or simplest shape, and, no matter how various are other forms,

*Antiquities of the Southern Indians, C. C. Jones, p. 255.

they are but modifications of the triangular idea; thus, if the lower corners of the triangular arrow-point are round, the leaf-shaped form is produced. Still preserving the triangular form and by merely chipping a notch on each side to facilitate its attachment to the shaft, we have the stemmed implement. When hollowed out, the base of the triangle produces the indented or shark's tooth form.

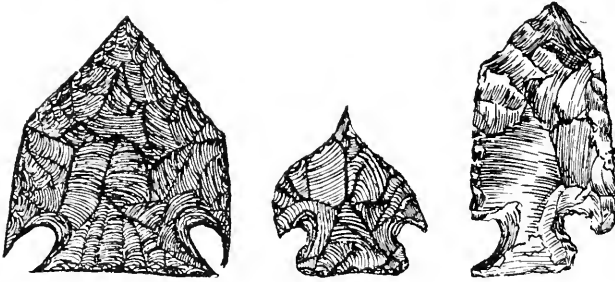


Fig. 301. Three more curiously pointed and barbed forms are seen in Fig. 301. All of them are made of jasper. The one with but one barb belongs to the Deisher collection. The other two are owned by Dr. Stewart. The small implement has a drill-like appearance. It is, however, too delicately chipped to have served

for that purpose. Its needle-like point would have been destroyed on first contact with another hard material. The other two specimens may have been repointed. All three of them are nicely flaked. Many other curious and interesting forms from this section might be figured, but want of space forbids.

SPEAR-HEADS.

Spear-heads are but larger forms of the many and various shapes of so-called arrow-heads. Attached to a pole, 6 to 8 feet long, they were used at close range, and when smaller, were used as javelins. Often, too, those long, tapering and slender forms were used as fish-spears. I have found this class always along streams which abounded, in Indian times, with fish. "The form in question is comparatively rare in the fields or associated with other weapons or other implements of the chase, but quite common on the shores and in the beds of those fishing localities that are nearest to known sites of ancient Indian villages."[†]

We do not find here such artistically wrought nor so large implements of this class as are obtained in the western and southeastern states, and on the Pacific coast. While they in those parts, in some instances, obtain a length of from 12 to almost 18 inches, their greatest length in the northern Atlantic States and New England is about 6 inches.



Fig. 302 represents a spear-head or dagger of the very rare leaf-shaped tanged form $4\frac{1}{4}$ inches long and $1\frac{3}{4}$ inches broad at its widest part. It is made of jasper and nicely flaked. It was found on the surface near Kutztown, Pa.

[†]Dr. C. C. Abbott in Smithsonian Report, 1875, p. 278.

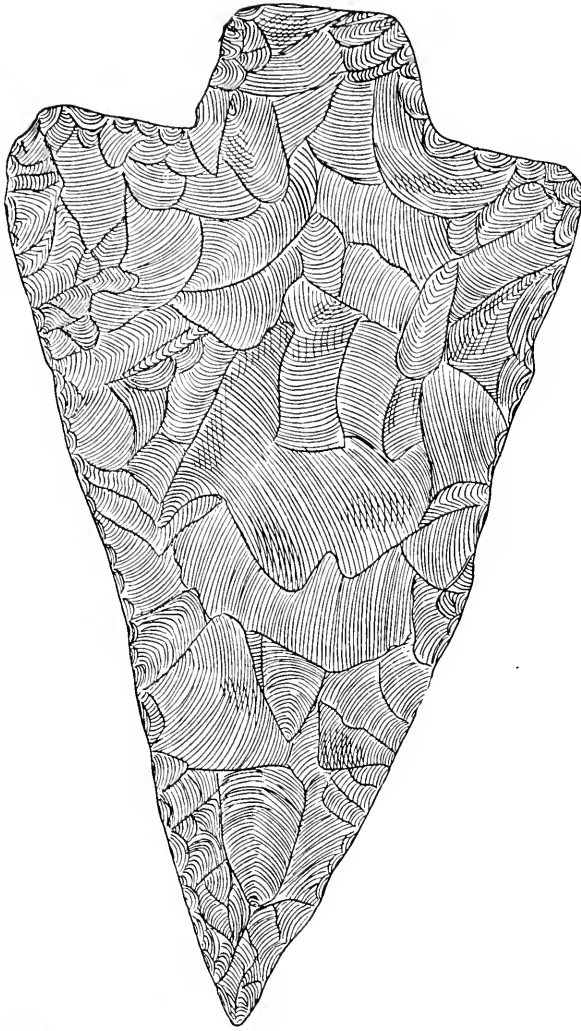


Fig. 303. S. 1-1. Another interesting implement, $5\frac{1}{4}$ inches long and almost 3 inches wide at its stem, is nicely flaked from yellow jasper. It is covered with that glossy patina produced by age and very often seen on jasper implements and so much admired by archaeologists. The relic was found on Great Island in the Susquehanna River, Clinton County, Pa., and belongs to Dr. T. B. Stewart, of Lock Haven, Pa.



S. 1-2



S. 1-3

The two slender implements shown here as Figs. 304-5 were no doubt used as fish-spears. Attached, however, to a short handle they would have served equally well as daggers. The first is of black flint or basanite, $3\frac{3}{4}$ inches long and 7-16 of an inch thick through its centre. The second made of quartzite has a length of $4\frac{5}{8}$ inches and is 5-16 of an inch thick. Both were found by the writer on the surface of Lehigh Island in the Lehigh River at Allentown, Pa., and belong to his collection. The broader spear-heads too may have served as well in spearing large fish as that of animals on land.

The sturgeon (*Acipenser*) frequently attains a length of eight feet, while some gars (*Lepidostens*) taken in the Delaware have measured five feet. With such fish to deal with the very stoutest of the *hunting spears* we have described would alone be of use; and even with them it would appear a laborious task to finally subdue and land these large and powerful denizens of the water.

Just as the broad-bladed, stout hunting-spears were frequently, we think, used in capturing the largest of our river-fish, so it is probable that these long, slender forms of spear-points were occasionally used for the smaller animals, for which they are as available as any stone weapon that could be devised; yet we doubt not the principal purpose of their manufacture was that of spearing fish, and that the other uses to which they were put were governed by the custom of adaptation to circumstances.*

Every collection, even of moderate size contains heavy, though nicely chipped implements having the arrow or spear-head form, varying in length from 1½ to 2½ inches and of almost the same breadth which were used as points for spears.

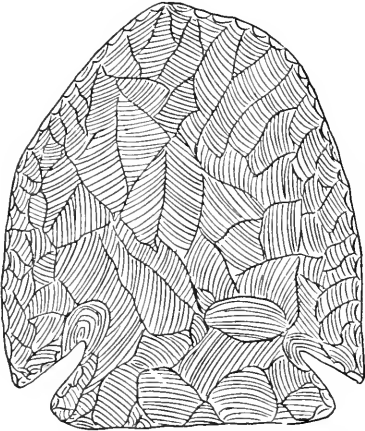


Fig. 306, represents one form of these implements. It may be the lower or base part of a once larger specimen was chipped into its present shape. Implements altered in this manner are often found. It was picked up near Lock, Pa., and is in Dr. Stewart's collection.

The writer believes they answered the purpose much better than those long implements. In a life and death struggle between man and animal there was no danger of the loss of a short point.

A favorite and manly mode of taking fish, says Col. C. C. Jones, was with the bow and arrow, and with the dart or spear. Again he writes and quotes Father Hunnepin† who pays the following compliment to the dexterity of the southern Indians dwelling "upon the River Meschasipi." They "are very subtle and have such lively and piercing Eyes that though the fishes glide very swiftly in the Waters, yet they fail not to kill them with their Darts, which they vigorously thrust a little before into the Water when they shoot out of their Bow. Moreover, they have long Poles with sharp Points which they dart from them with great Accuracy, because of their being so sharp sighted; they also kill great Sturgeons and Trouts, which are seven or eight feet under water."

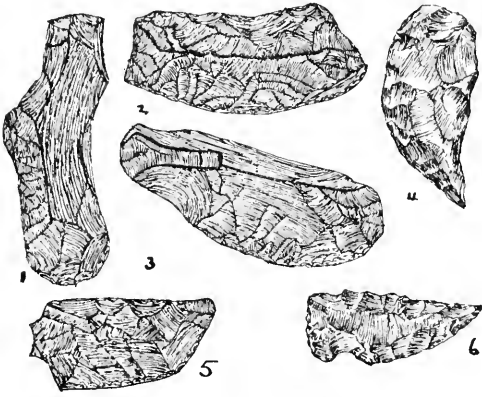
*Report Smithsonian Institution, 1875, p. 283.

†A Continuation of the New Discovery," etc., p. 102. London, 1698, in *Antiquities of the Southern Indians*, p. 328.

KNIVES OR CUTTING TOOLS.

These implement are found from the simple partly sharpened flake, temporarily used to the most artistically finished leaf-shaped object. So varied in form are they and so often do they assume the shape of the arrow or spear-head that it is very difficult to classify them.

Dr. Charles Rau says, "collectors, for instance, are very ready to class chipped stone articles of certain forms occurring throughout the United States as arrow and lance-heads, without thinking that many of these specimens may have been quite differently employed by the aborigines. Thus the Pai Utes of southern Utah* use to this day chipped flint blades, identical in shape with those that are usually called arrow and spear-points, as knives, fastening them in short wooden handles, by means of a black resinous substance. The writer was informed by Major Powell that these people use their stone knives with great effect, especially in cutting leather.†



In the above cut, are shown a few curiously formed implements which the aborigines used for cutting purposes. A few of them have the form of our present knives and were no doubt hafted. Nearly all of them could also be used as scraping tools. Nos. 1 of felsite and 2, 3, 5, of jasper were found near Lock Haven, Pa., and belong to Dr. Stewart. Nos. 4 and 6 of jasper found near Kutztown, Pa., belong to Mr. Deisher.

Fig. 307. Knives S. ¼.

Knives were sometimes wrapped around one end with a strip of the skin of an animal. This was no doubt done to protect the hand. These can be seen in the large public museums. So-called hafted flint knives were also used as daggers.

Teshous, or "spall knives" are found on old Indian camp-sites. They are round, flat discs of sharp stones, one side of which is convex, and the other side flat. They were with a sudden blow struck off water-rolled stones. The Shoshonee Indians use implements of this kind as knives, and from them we get the name. A number of these knives of different sizes are shown in Fig. 308. They are frequently found on the surface, associated with other remains of the Indians. To the left of them are figured 4 water-worn stones from which such cutting implements were struck. They belong to Mr. H. C. Mercer, of Doylestown, Pa., and were found in that vicinity. Mr. Mercer writes in an entertaining manner of them in his article.‡

*This was written in 1875.

†Smithsonian Contributions to Knowledge, 287, p. 2.

‡Pebbles chipped by Modern Indians as an aid to the study of the Trenton Gravel Implements, Published in Proceedings of the American Association for the Advancement of Science, Vol. XVI, 1892.

SCRAPERS.

Scrapers are simple forms of stone implements easily changed from flint flakes into serviceable tools, and so called because they were used principally in scraping skins and other surfaces.* A typical scraper, Sir John Evans says, "may be defined as a broad flake, the point of which has been chipped to a semi-circular bevelled edge† wound along the margin of the inner surface, similar in character to round nosed turning chisel." These tools are classified in America as those notched above, and those having the form of a sheaf of wheat viewing them stem downward,‡ or as Gen'l Thruston will have it, spoon-shaped.§ These were chipped to an edge on both sides, and were notched and stemmed, some having expanding bases. Others with straight stems, and with the aid of pitch or other resinous substance were fastened to short handles and no doubt made useful tools.

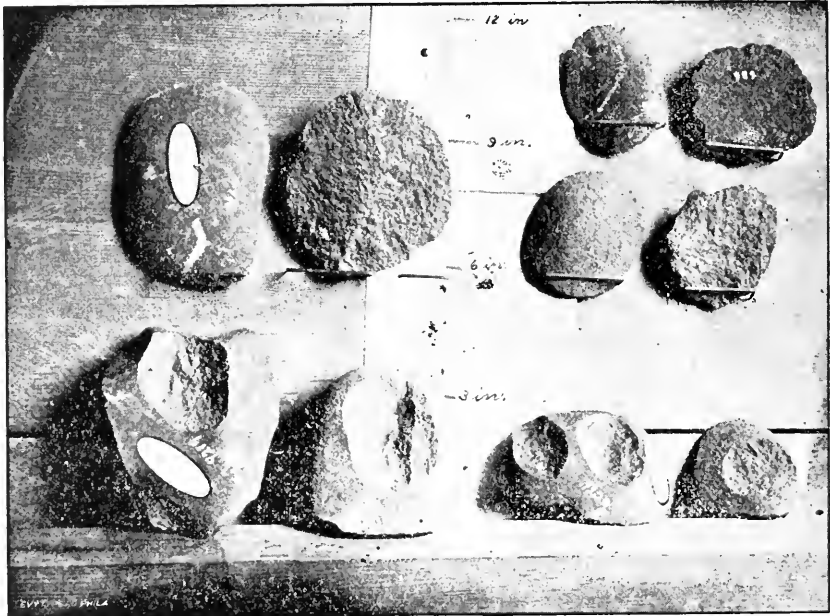


Fig. 308. S. 1-5.

They were often made from other broken chipped implements. They are sometimes called "bunts" or blunt arrow-points, and were, perhaps, used to stun game, often more desired living than dead. They are also found with their edges worn smooth. These were certainly used as tools for scraping or dressing skins. Professor Perkins has described them in a previous section and but few remarks are necessary.

*Col. C. C. Jones owned several having square cutting edges. See *Antiquities of the Southern Indians* p. 289.

†*Ancient Stone Implements of Great Britain*, p. 269.

‡Dr. C. C. Abbott in *Smithsonian Report for 1875*.

§*Antiquities of Tennessee*, p. 224.

In connection with scrapers, although they were not used as such, may be mentioned small chipped implements of almost square form, which were used as gun-flints. Two in the writer's possession, of yellow jasper were found on Lehigh Island at Allentown, Pa. One of them measures on every side $\frac{7}{8}$ of an inch. The other is of an oblong form measuring on two sides $\frac{7}{8}$ of an inch, and on the other $\frac{5}{8}$ and 13-16 of an inch. Similar objects have been found in the state of New York.*



Fig. 309 represents an interesting and rare form of stemmed beveled scraper $\frac{1}{2}$ size, which was no doubt hafted. The material from which it was made is a bluish jasper. It was found near Reading, Pa., and belongs in the collection owned by Mr. Deisher.

DRILLING TOOLS OR PERFORATORS.

It is certainly a difficult undertaking to correctly classify these very interesting and at the same time perplexing implements; which assume an almost endless variety of forms.

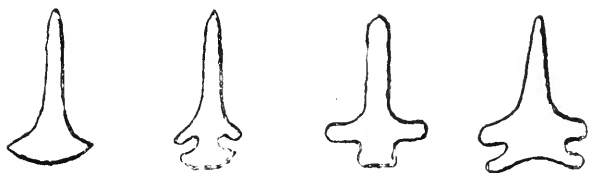


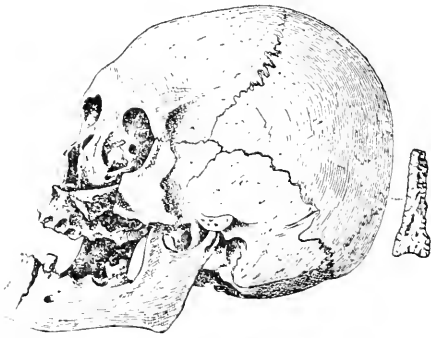
Fig. 310.

It is supposed that the forms figured in this book represent most of those in the hands of public and private collectors and were used as drills. Of them, Dr. Wilson has this to say: "An anomaly in arrow-points should not be overlooked. One of the prehistoric implements of America is that which usually has been called the perforator or drill, though sometimes, jocularly 'hairpin.' It consists of the base or pile, which is round or nearly so, pointed as though suitable for drilling or boring, with a stem or base after the fashion of arrow-points. It has usually been supposed that this spreading base was to be held between the thumb and fingers, gimlet fashion, and used as a drill. Some of these implements appear to have been made primarily for this purpose, while others have the full and complete base, stem, shoulders and sometimes barbs, of the stem end of an arrow-point, and of these it has always been said or supposed, that the perforator or drill filled a secondary office and was possibly a broken arrow-point. The blade is chipped away on either edge until the pile or base is very nearly round and quite pointed. These have never been classed as arrow-points or spear-heads, but it is curious to remark that the only wounds shown in the two human skulls in the U. S. National Museum should have been made by stone implements or arrow-points of this peculiar class."[†]

*Aboriginal Chipped Stone Implements of New York, William M. Beauchamp, S. T. B. Vol. 4, p. 66.

[†]Arrow-points, Spear-heads and Knives, pp. 944-45. Report of the Smithsonian Institution, Part 1, 1897, Washington, D. C.

The majority of them show no signs of wear, and so delicately wrought are some of them, that were they used in contact with other stones they would at once be destroyed. These long slender objects would do very well as graving tools. The Indian engraver certainly used a pointed flint tool upon the various polished objects of stone and also of shell found in the United States, and the so-called drill may, in many instances have been used for that purpose. They are found stemmed, pointed at both ends, and with expanding base, or T shaped. Those doubly pointed may, as some think, have served as fish hooks. This theory seems to the writer as rather far-fetched.



United States National Museum at Washington D. C.

In Fig. 311 is shown a skull of an Indian pierced with a drill-like arrow-point. It is now in the Army Medical Museum, Washington, D. C. The skull was originally received by the Smithsonian Institution from Dr. L. G. Yates, of Alameda County, California. It shows a man of advanced age. A long flint arrow-point has penetrated the skull through the left orbit, and the figure shows it in place as originally found impacted. Another human skull from Henderson County, Illinois, pierced through the squamous bone on the left side by a drill-like arrow-head, can be seen in the

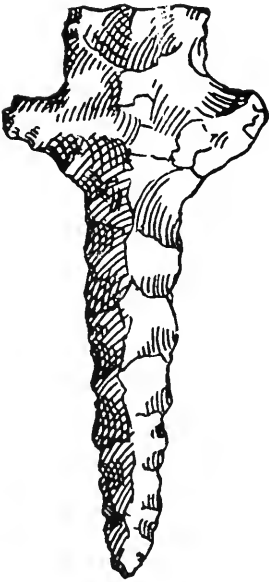


Fig. 312 shows a winged drill-shaped object of jasper natural size, and is in the collection of Mr. Deisher. It was found on the surface near Moselem, Pa. It belongs to the stemmed variety and shows no signs of wear.



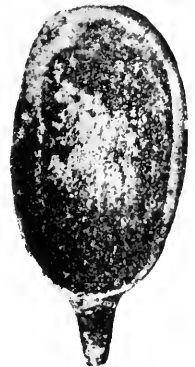
Fig. 313. This interesting little object $\frac{1}{2}$ size, made of jasper belongs to Dr. Stewart, and was found near his home. While the upper part of it is finely chipped into a needle-like point, its base is rough and unfinished. It may have been used as a graving tool.

Fig. 314. A jasper specimen shown full size and found near Kutztown, Pa., belongs to Mr. Deisher. I introduce it here because of its drill-like shape. Continual use may have worn down its long point to its present form.



Fig. 315 is a finely chipped T-shaped object of mottled blue jasper 3 3-16 inches long. The base or T part is one inch wide, and the long slender point at widest part a little more than an inch. It is slightly indented at the base. This fine specimen belongs to Dr. Stewart near whose home it was found.

Fig. 316 was found in New England. It is peculiar. It must have originally been a very long drill.



STEATITE TOOLS AND VESSELS.

The Indians of the Atlantic coast used extensively steatite or soap-stone in the manufacture of their various kinds of vessels, for cooking and other purposes, which was either obtained on the surface or by quarrying. The material is plentiful over a large section of territory, and wherever it occurs the outcrops of it have been worked by them. The implements used in procuring and making steatite vessels are somewhat varied. There were brought into service no doubt, wooden levers which have disappeared.

mauls, hoes, picks, grooved and ungrooved axes and other implements that served as shovels. Many of the grooved axes found in the vicinity of these quarries show signs of very rough usage. They, with other heavier tools,

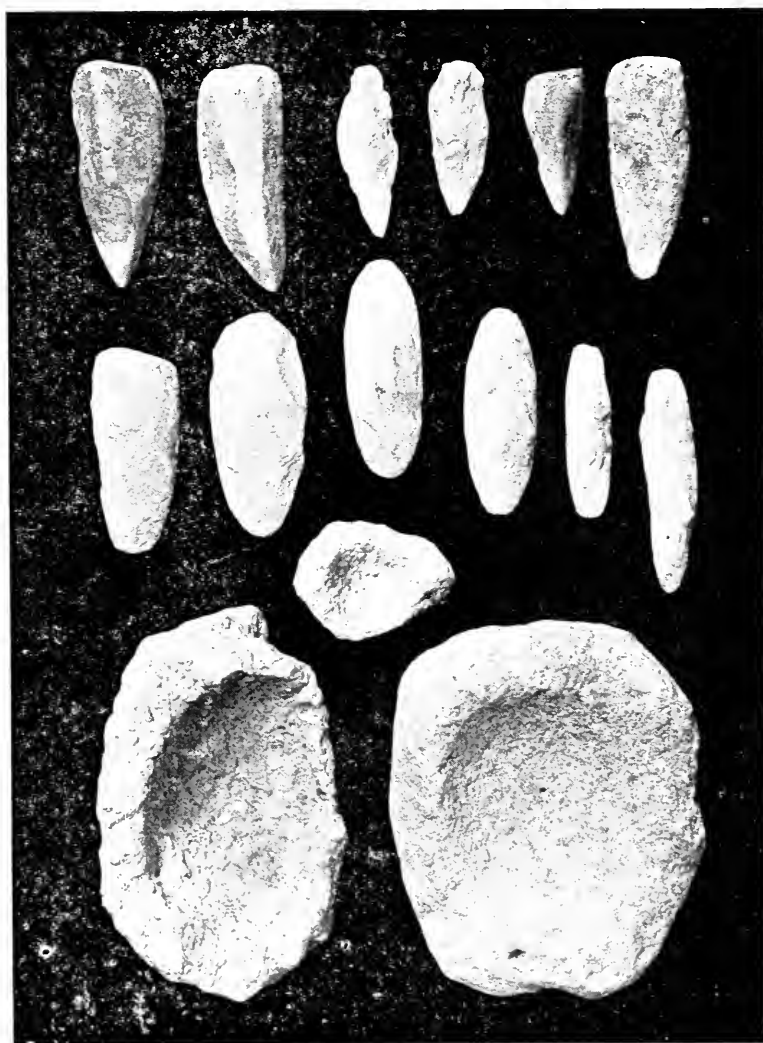


Fig. 317. S. about 1-9.

were used, no doubt, in detaching from the mother rock the blocks to be shaped into tools which were then finished by smaller tools into vessels ready for use. These are shown in Fig. 317 in the fine series of picks and chisels small and double pointed, which are owned by Mr. Thomas H. Windle, Coatesville, Pa. These tools were found in the past in great abundance at a soap-stone quarry about 2 miles S. W. of Christianna, Lancaster County, Pa. Both picks and chisels are made of an

eruptive rock and are very tough. This material is found abundantly in Eastern Pennsylvania.

The chisels measure in length from $3\frac{1}{2}$ to 9 inches and weigh from $\frac{1}{8}$ of a pound to 2 pounds. The picks are generally shorter than the chisels and weigh from $\frac{1}{8}$ of a pound to 5 pounds. Mr. Windle has found a few chisels of jasper and white quartz. There are several ways in which these tools were used, says Prof. H. W. Holmes.*

In the lower part of the cut are also seen three unfinished pot-stone vessels, which were found near a quarry in Lancaster county, Pa. They also belong to Mr. Windle.

Soapstone or steatite although rather a soft stone is tough, and, if free from veins, can be worked into any desired form. It will resist a high degree of heat without being destroyed. It was, therefore, a very desirable material for culinary purposes.

The finished bowls, which are generally shallow and oval in form, have at each end ear-like projections which served as handles. They differ, however, in shape and size and in position. When the vessel was deep the handles were placed near the base. If shallow, they occupied a place nearer the rim. These vary in size from small cups to those having a diameter of almost $1\frac{1}{2}$ feet, and over one foot high on the outside.

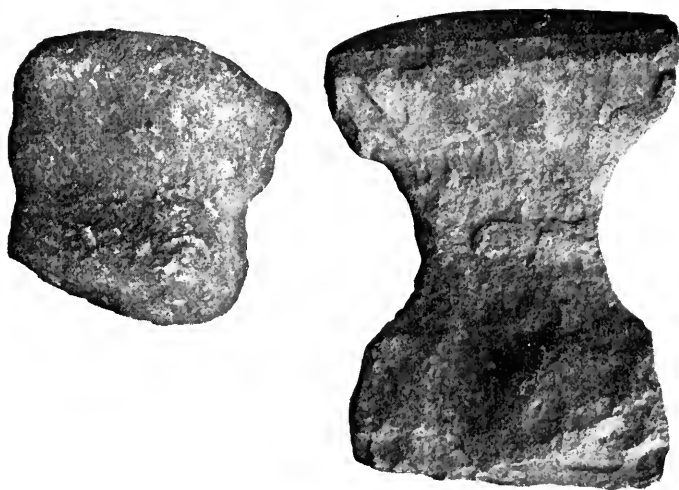


Fig. 318. S. about 1-5.

Fig. 318 represents two of these bust-shaped stones now in the Department of Archaeology and Palaeontology, University of Pennsylvania, Philadelphia. Their catalogue numbers are 10.075; which is $12\frac{1}{2}$ inches high, and 10.082, which attains a height of 20 inches.

ANVIL SHAPED STONES.

Of great interest to the archaeologist are the above objects, also called Indian busts, found along streams flowing through the northern part of Buck's county, in eastern Pennsylvania. They vary in height from 5 inches

*Stone Implements, p. 112. Fifteenth Annual Report, Bureau of Ethnology, Washington, D. C.

to 2½ feet, and are made of argillite boulders found *in loco*. Mr. Charles Laubach, of Riegelsville, Pa., a well-known geologist and archaeologist found a number of these relics at Fairview, which were nicely carved, and, in outline, he informs the writer they resemble somewhat the features of the Red people.

A few months after the discovery of these above noted, Mr. H. C. Mercer, another well-known writer and archaeological authority, thoroughly investigated the above locality and adjacent country, and was fortunate in discovering more of them. These are to be seen in the archaeological museum belonging to the University of Pennsylvania. At first they were rather coldly received by archaeological experts, but their genuineness becoming apparent they were classified as above. Their use is unknown. Mr. Laubach, after a thorough investigation of them, arrived at the conclusion that they were utilized in some mortuary ceremony, or were made to commemorate the life and service of a great and departed chieftain.

NET SINKERS.

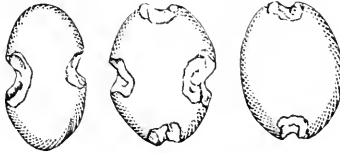


Fig. 319. S 1-4.

These implements are found on the banks of rivers, large creeks, and other bodies of water where nets were used in taking fish. They are generally flat water-worn stones of different sizes and various forms, tending, however, almost always to the oval in shape. They have notches artificially worked into their sides opposite each other by a few simple blows, and are correctly termed "net sinkers." They vary in weight from half an ounce to 10 ounces, and once in a while are found weighing from a pound to more than 15 pounds.* Mr. T. M. M. Gerner, of Muncey, Pa., owns a very fine collection of them and has published some interesting papers on archaeological subjects. The frequency of sinkers in this vicinity, says Dr. Rau,† indicates that the Indians were much engaged in fishing at this point. (Susquehanna river).

The sinkers found here are almost exclusively made from the material called graywacke which belongs to the geological formation whereon is situated Muncey. The longest specimen shown by Dr. Rau is a flat stone of irregular outline, 8 inches wide across the broadest part, and 1¾ inches thick in the middle. It weighs 2 pounds and 14 ounces. It may have served for weighing a set-net. From this region have been taken many sinkers weighing from ½ ounce upward. These small and light specimens were no doubt used in connection with hook and line.

*Mr. Nat. E. Booth, of Southold, Long Island, reports a grooved sinker or anchor from that vicinity weighing 15½ pounds. It is flat on one side and slightly convex on the other. The groove completely encircles the upper part of the implement. Its shape is similar to a plummet.

†Prehistoric Fishing, p. 157-59.

The 3 sinkers shown here give a definite idea of the form of these implements, although many found are not of so ovoid a shape. Most of them are notched either on their sides as represented in the first, or at the ends as can be seen in the last. More rarely do they occur niched both at sides and ends as the central one shows. Mr. Gernerd tells us that specimens are sometimes found with but one artificial notch, a natural one, on the opposite side, serving the required purpose. One was found having several artificial nicks, due, no doubt to a playful whim of the maker. "We have sometimes picked up these sinkers quite a distance from the river; but only on the banks of the stream have we found them in large numbers. They are still (1889) frequently found, although thousands have been carried away by relic hunters."*

Dr. C. C. Abbott found in the summer of 1878, a series of these (73) notched pebbles in the wasting northern shore of Crosswick's Creek, about 2 miles from its mouth, at Bordentown, New Jersey. They were in an irregular heap, in some instances one just above the other, but in contact. They were 22 inches below the surface,†

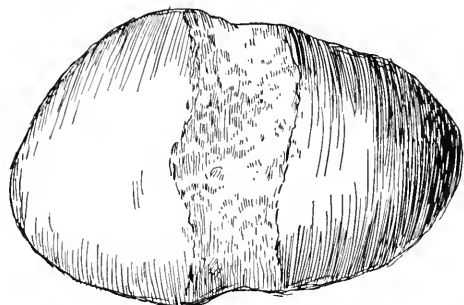


Fig. 320 shows one of the plummets in the Deisher collection. The writer owns 9 of these implements which are part of a cache found on the banks of Aquanahicola creek, a short distance from where it empties into the Lehigh river of which it is a large tributary at the Lehigh Water Gap in eastern Pennsylvania.‡ The largest is 2½ inches long and the smallest measures in length 1½ inches. Three of them are completely grooved, and the remainder partly grooved or notched. One of them was pecked into a rounded shape from a larger

piece of stone. In the writer's collection are a few notched soapstone sinkers of similar appearance. S. 1-1.

In the catching of fish the Indians used hooks of either stone or bone as well as nets. The Moravian missionary, George Henry Loskiel,§ writing on this subject about the Lenni Lenape, or Delawares and Iroquois, says: "Little boys are even frequently seen wading in shallow brooks, shooting small fishes with their bows and arrows. The Indians always carry hooks and small harpoons with them, wherever they are on a hunting party; but at certain seasons of the year they go out purposely to fish, either alone or in parties. For this purpose, they use the neat and light birch-bark canoes and others made chiefly of cypress. These look like long troughs and are of various sizes."

He also describes shad-fishing: "The Indians run a dam of stones across the stream, where its depth will admit of it, not in a straight line, but in

*The Now and Then, Vol. II, p. 75. J. M. M. Gernerd.

†Primitive Industry. C. C. Abbott. p. 238.

‡Apanashico'a a Delaware Indian word, means in our language Brush net fishing.

§History of the Mission of the United Brethren among the Indians in North America London, 1894. Part I, p. 94, etc.

two parts, verging towards each other in an angle. An opening is left in the middle for the water to run off. At this opening they place a large box, the bottom of which is full of holes. The Indians then go up the stream and drag a huge brush and vine affair down to the dam, thus driving the fish ahead and into the box. By this contrivance they sometimes catch above a thousand shad and other fish in half a day."

Robert Beverly writes: "Before the arrival of the *English* there the *Indians* had Fish in such vast plenty, that the Boys and Girls would take a pointed stick, and strike the lesser sort, as they swam upon the Flats. The larger Fish, that kept in deeper Water, they were put to a little more Difficulty to take; But for these they made Weir; that is, a Hedge of small riv'd sticks, or reeds, of the Thickness of a man's Finger, these they wove together, in a Row, with Straps of Green Oak, or other tough Wood, so close that the small Fish cou'd not pass through. Upon High Water Mark, they pitched one end of this Hedge and the other they extended into the River to the Depth of Eight or ten Foot, fastening it with Stakes, making Cods out from the Hedge on one side, almost at the End, and leaving a Gap for the Fish to go into them, which was contrived so that the Fish could easily find their Passage into those Cods, when they were at the Gap, but not see their Way out again, when they were in. Thus, if they offered to pass through, they were taken.

"Sometimes they made such a Hedge as this, quite across a Creek at High Water, and at Low would go into the Run, then contracted into a narrow Stream, and take out what Fish they pleased."*

ADZES AND CHISELS.

The Adzes are similar in appearance to the celts. The difference being that while one of their broader sides is convex, the other is flat. They are in very rare instances found slightly curved. The writer owns two of these. Chisels are generally long, wedge-shaped tools. All of their sides are flat. Both of these implements are extremely rare in this geographical section, and but few can be seen in private collections. They are mostly made of tough eruptive rock. Slate was sometimes used in their manufacture. Figures of both of these implements are shown in other parts of this book.

RELICS OF COPPER FROM EASTERN PENNSYLVANIA AND NEW JERSEY.

Implements of the material hammered into shape with the aid of stone tools are very rarely found in the above geographical section. Native copper has been found in pieces weighing several pounds along the Connecticut River, and also in the State of New Jersey. Therefore one cannot with a certainty say that all the tools found here were brought from the copper-bearing region of Lake Superior. A small, much oxidized celt-like object was found on the surface near Millbach, Lebanon County, Pa., by Mr. H. L. Illig, its present owner. The lowest or broadest part of a chisel or celt much corroded by the elements, was found a few miles south of Reading, Pa. A short distance south of the same city was found a gouge-like copper

*The History of Virginia, in Four Parts, p. 130, etc. London, 1722.

implement, over six inches long and tapering almost equally towards each end. Two more copper objects were found not very far away. Another copper axe was found on the surface near Friedensburg, Berks Co., Pa. One of the finest celts or chisels ever handled by the writer, and there is nowhere, in any collection, either public or private, one to excel it; was found in 1810 on Chamber's Island, in the Delaware River four miles above the Delaware Water Gap. With it were obtained, at the same time, beads and other small objects; perhaps the contents of a grave. It is $3\frac{5}{8}$ inches long and $1\frac{1}{4}$ wide at its top, and gradually increases in breadth to its cutting edge where it measures 2 inches. At the top is also its thickest part. Here it measures $\frac{7}{16}$ of an inch, and tapers down equally on both sides to its cutting edge. It weighs 9 ounces. A quarter of an inch above its cutting edge, on each of its four angles, are cut, on one side, 11 notches and on the opposite angles 12. Whether these notches were cut into the celt to add to its beauty or to commemorate some event is impossible to tell. It still shows marks of hammering and is in perfect condition. Dr. Stewart's collection contains copper ornaments. A few copper perforated pendants, and spiral objects are owned by Prof. A. J. Waychoff.

Dr. C. C. Abbott ascertained through correspondence that in New Jersey were found in all 128 copper objects, 11 celts, 5 spears, 8 arrow-points, 13 bracelets, 70 beads and 21 fragments of metal.*

In the Annual Report of the Peabody Museum of American Archaeology by Professor F. W. Putnam, Dr. Abbott also reports that when in 1832 the Delaware and Raritan Canal was dug, there were found many skeletons of Indians during the course of the excavations. About the wrist bones of many were narrow bands of hammered copper, and some large crescent shaped ornaments were also uncovered. In one instance a grave was opened from which a nodule of native copper was taken weighing thirteen ounces. Mr. O. M. Bigelow, of Baldwinsville, N. Y., sends me photographs of copper objects from his region where quite a number have been found.

ARTICLES OF SHELL IN N. Y.

Shell beads and ornaments are mostly quite recent in the interior of New York, but a few early examples have been found: Two worked shell pendants (ornaments) have been found in Onondaga county precisely like the shell sinker figured by Dr. Rau from Florida. Shell cups are rare. Discoid and cylindric beads became abundant after 1630. A New York bulletin on wampum and other articles of shell, profusely illustrated, is in preparation by Dr. Beauchamp. Articles made of this material are very rare in other parts of this section. The writer does not now know of one object.

GOUGES.

Gouges are concave or partly concave celt-shaped implements of various lengths and sizes. They are generally made of the same tough materials as are grooved and ungrooved axes. They are less plentiful than axes, and their occurrence is chiefly confined to the states bordering on the Atlantic

*The Use of Copper by the Delaware Indians in *American Naturalist* 1885, pp. 774-78.

ocean. They are most plentiful in the state of New York, and Canada. A few have been found in other parts of this section. Being often hafted, they were no doubt used in aboriginal carpentry and were unknown to the later Indians.* Figures of these interesting tools are shown in other sections of this volume.



Fig. 324 represents a very rare specimen $\frac{1}{3}$ size, which is grooved around its upper end. It is made of a very hard compact slate. It belongs to Mr. Deisher, and was found near Kutztown, Penn.

PIPES.

There is found no work of Aboriginal Art which so much commands the attention of archaeologists and collectors alike as do the pipes made by our prehistoric American races, and which are discovered in mounds, graves and often on the surface. Even more were they appreciated and held in esteem by their makers and owners, which is convinced by the great amount of artistic work done upon many of them.

With the Amerind, even at the present day, was there no habit so universal as that of smoking. The narcotic influences of tobacco produced feelings of hilarity, and often that of intoxication when the smoke was inhaled, and it was also often a solace to the smoker in his home during his hours of relaxation and rest. Nor was he without his favorite pastime even when away at war or on the chase. He believed that tobacco was of Divine origin, coming as a direct gift for his especial benefit from the Great Spirit, whom he believed to be also addicted to the habit of smoking.

For the construction of his pipe which the Aborigine valued so highly the choicest material was selected. Often did he go far away from his home to procure the stone from which he made it; and in shaping and polishing it spent days and even months. Experience taught him what sort of stone best withstood the action of almost continued heat, and as it was his almost constant companion, one can well understand why, when possible, it was so elaborately made.† The most primitive pipe of all was a straight tube, many of which have been found in aboriginal burial places, from Mexico to the Great Lakes, and from the Atlantic to the Pacific oceans. Pipes of this class are figured in other parts of this volume.

* Polished Stone Articles, etc., Vol. IV, p. 23. William M. Beauchamp, S. T. D.

† Pipes and Smoking Customs of the American Aborigines, J. D. McGuire, Smithsonian Report, 1897, I, p. 365.

These smoking utensils of various kinds of stone as well as those of clay or terra cotta, from the size of a thimble to those having a capacity of one and even two ounces and of many different designs both in human and



Fig. 325 is a singular double-faced pipe of clay, stem wanting, shown full size. It was found many years ago near Muncey, Penn. The faces appear owl-like.

Fig. 326 is another full size pipe of clay, the bowl of which is ornamented with cord-like rings, over which on each side of the specimen has been placed a rectangular piece of clay. It was taken from a burial mound near Hall's Station, Penn., and its stem is missing. These interesting specimens are part of the fine collection belonging to Mr. J. M. M. Gernerdt, of Muncey, Penn.

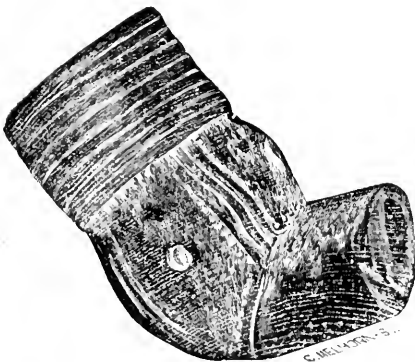


Fig. 327 was found more than 40 years ago on an Indian village site near Muncey, Penn. It was made of clay, well burnt, and is shown full size. Its ornamentation consists of straight and circular incised lines and dots.

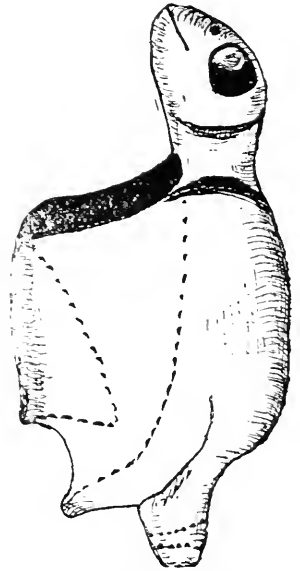
animal forms are found in this geographical section. In a perfect condition they are far from numerous. Especially may this be said of those of terra-cotta. This is easily accounted for. In making them they used the same

material as that from which their pottery was made, which appears to have been a mixture of sand, clay and broken or pounded shells. Pipes of this material were, no doubt, used almost individually, and not in any ceremony or other function.



Fig. 328. This specimen, also of clay, shown $\frac{7}{8}$ size was found nearly opposite Muncy, Pa. on the south side of the West Branch of the Susquehanna River. The human face is depicted on one side only. It is somewhat ornamented on the opposite side. Its entire stem is missing. These two pipes are also owned by Mr. Gernerdt.

Fig. 329 is an animal pipe shown natural size. It was found on the surface 9 miles north of Allentown, Pa. and is owned by Mr. I. E. Nagle, Allentown, Pa. The funnel-shaped bowl which faces the effigy and the stem perforation of same shape were hollowed out with a broad drill. It is 3 inches long, 1 inch thick and weighs 3 ounces. The tail, as the figure shows was perforated for suspension. This, says Mr. McGuire, "is the case with so many of the pipes found in countries where deep snow lies."*



Hollow and solid pieces of wood with the aid of sand and water were used in drilling pipes. Also often large and strong stone perforators. Those pipes with rounded hollow terminations in either stem or bowl were drilled with a solid wooden implement.

Fig. 330 presents 6 pipes of various forms from the collection of Prof. A. J. Waychoff, Waynesburg, Pa.

No. 1, is of black slate and shows a we leaved bird-head. Surface find, Carmichaels, Pa. Black slate.

No. 2, a platform or monotor pipe of blue sandstone, found 3 miles south-east of Waynesburg. Broken, one-fourth being lost. Edge of platform ornamented with transverse notches.

No. 3, of grayish-brown steatite. From a grave near Blacksville, W. Va. It is seldom that the stems of this class of pipes show signs of wear of the teeth, hence one must infer that a small stem of wood or bone was inserted before use in smoking.

No. 4, is of skilled workmanship, representing a horned owl. Its wings, legs, tail, beak, large eyes, horns and breast are plainly outlined. Made of steatite, polished. Found near Waynesburg, Pa., in a stone cairn.

*American Aboriginal Pipes and Smoking Customs. Rep. of National Museum, Washington, D. C., p. 426.

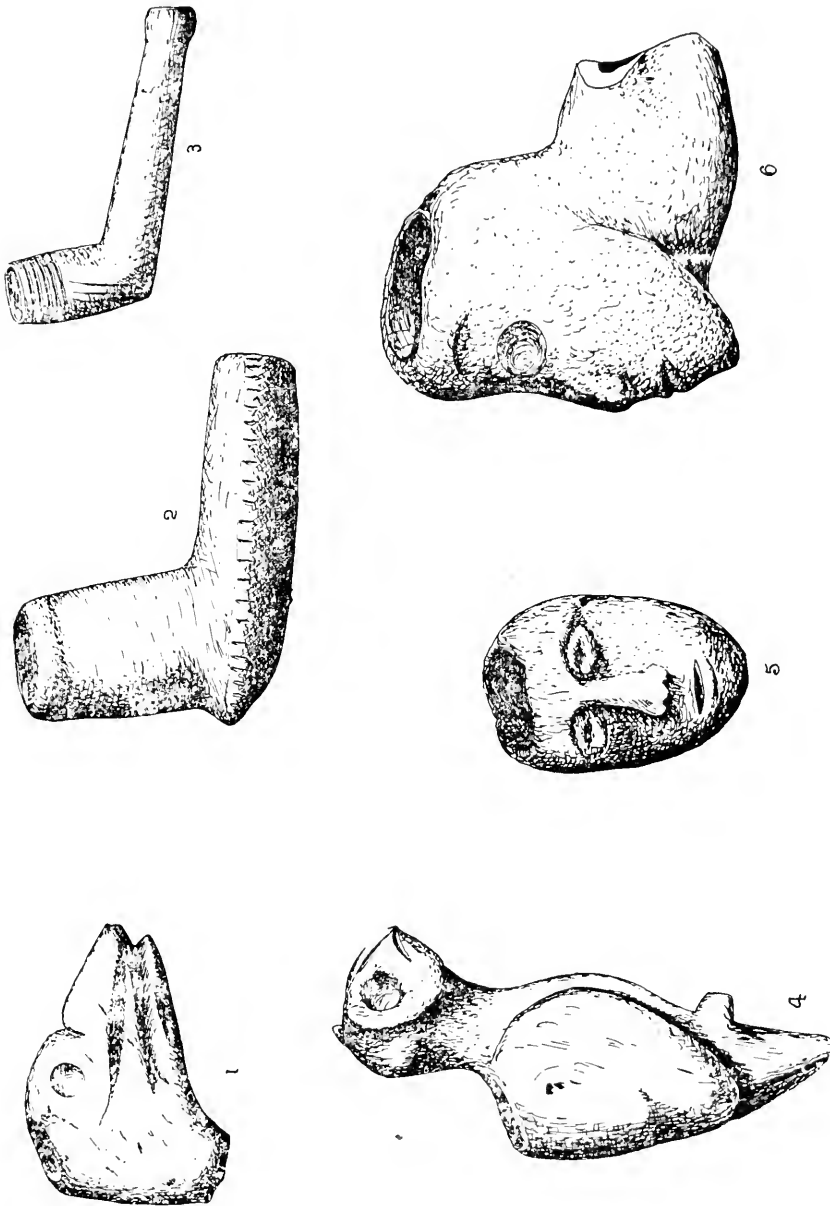


Fig. 330. S. 2-3.

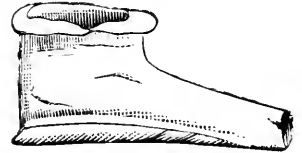
No. 5 is an ovoid bowl of red hematite representing the human face. The eyes, the nose (which is long and broad) and the mouth are artistically represented. The lips are prominent. The back of the pipe is flattened. Both perforations are conical. The stem hole is at the base of the occipital bone.

No. 6 is another effigy pipe, with a continuation of the neck which forms a short stem. It is made of limestone and was found near Monongahela, Pa. An adjustable wooden stem was used in smoking this pipe.



Fig. 331. This figure represents a curious combination of human and animal forms. The bowl is that of a human head, and the stem the head and the jaws of a reptilian animal, perhaps that of an alligator. The material is soapstone. It was found near Jersey Shore, Pa., and belongs in the Gerner Collection.*

Fig. 332 also a platform pipe, made of soapstone, was found near Muncy, Pa. Resembling very much the Indians foot-gear, its owner, Mr. Gerner calls it a "Moccasin" pipe. Its base is curved.



In Fig. 333 is shown, $\frac{1}{2}$ size, a beautiful polished broad base "Monitor" pipe of black steatite, found on surface near Kutztown, Pa. Of this class of pipes Mr. McGuire discourses entertainingly.* This pipe plainly shows the steel tool lines noticed by Mr. McGuire in his description of modern forms. A remarkable and unique feature noticeable on this pipe is the letter S plainly cut into its bowl in a single unbroken line. This letter was on the pipe when found and it has the same appearance of age as have the striae. It belongs to the Dr. Wanner collection, Kutztown, Pa.

Fig. 334 is a large rectangular pipe $\frac{1}{2}$ size made of a yellow steatite. It was found on the surface near Kutztown, Pa., and belongs to Mr. H. K. Deisher. The bowl shows stone chisel marks. The hole for the stem was drilled with a slender stone tool which is distinctly shown by the concentric circles in it. This specimen undoubtedly belongs to the order of calumet pipes.



*The editor is much indebted to Mr. Gerner for the loan of several cuts.

†American Aboriginal Pipes and Smoking Customs. Report National Museum. 1897. pg. 468.

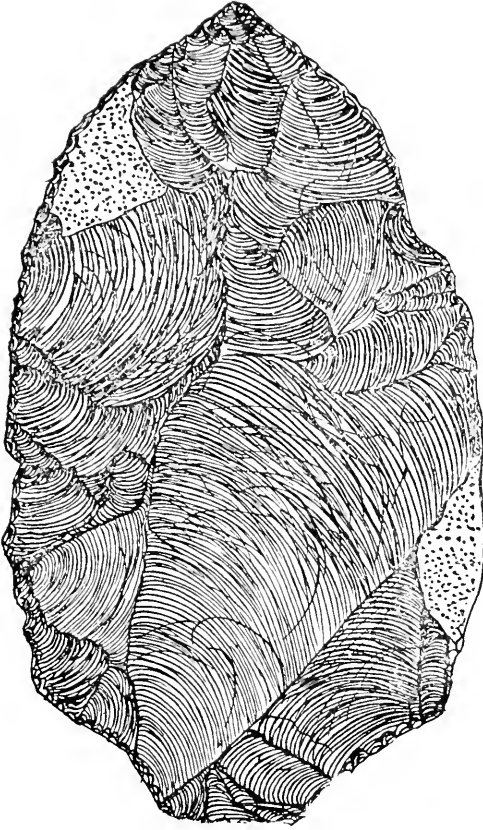


Fig. 335 represents a large flaked jasper implement, which is supposed to have been used for digging purposes. It shows no signs of wear on any part of its finely flaked surfaces, and its edges are as sharp as on the day it was finished. The specimen belongs to Mr. Irwin E. Nagle. It was found on the surface at Northampton, Pa. S. 1-2.

POLISHED STONE HATCHETS, OR CELTS.

This implement is obtained in every portion of the Western World. It is found chipped or pecked into form with cutting edges only sharpened, but more often with its surface entirely ground, in some instances presenting a beautiful polish. Illustrations in the St. Lawrence, Southern and New England sections show East Alleghany types.

CEREMONIAL WEAPONS.

Gracefully formed, and in almost all instances finely polished, banner stones are found here in various forms and sizes. But why they are called by this unsatisfactory name has often been a mystery to the writer. There is nothing about them to indicate that they were carried on a pole at the head of a body of men. They were made from banded and other slate, soapstone, and often from the harder and tougher kinds of stone such as diorite and greenstone.* The greatest numbers are perforated lengthwise through their central part.† Many of these perforations show the spiral

*Many are found with perforation wanting and others partly drilled. It is supposed that these were unfinished.

†Those here made of this tough material are rarely polished and seldom perforated.

lines caused by a stone drill. Others found still have remaining a central core, indicating that they were drilled with a hollow tool. A wooden drill cut from the elderbush, or a piece of southern cane, would with the aid of sand and water, have done good service in an undertaking of this kind. These objects are only found in America, and are of early date. The Iroquois knew nothing about them, and the later Indians made no use of them.* Their uses are an almost complete mystery. That to them was attributed a supernatural power cannot be doubted. I cite here an instance in verification of this theory. I own a perforated butterfly shaped† banner stone of steatite given by a Delaware Indian 130 years ago to an early white settler living 7 miles N. W. of Allentown, for a small quantity of tobacco. The Indian, loaded with skins and furs, which he had obtained in the mountains towards the north, was then on his way to the trading post of Bethlehem, 12 miles away. He carried this object because he believed that while on this mission the possession of it would bring, while hunting, good fortune to him.

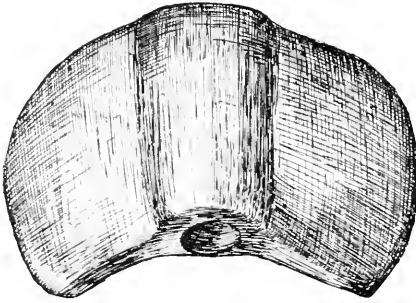


Fig. 336 shows a finely wrought and polished banner stone $\frac{1}{2}$ size, made of slate. It was found near Kutztown, Pa., and belongs to Mr. Zimmerman.

Fig. 337 shows two views of an unfinished hammer stone of diorite or greenstone, $\frac{1}{3}$ size, which was partly drilled with a hollow tool. The core, an evidence of this, is still visible. It was found in Ellington, N. Y. and belongs to Mr. W. T. Fenton.

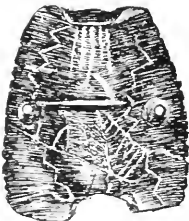
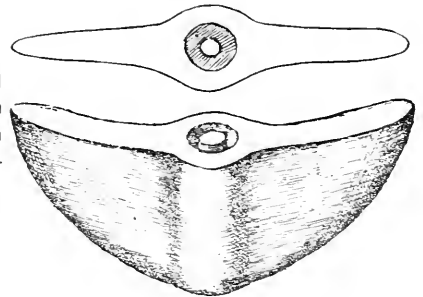


Fig. 338, $\frac{1}{2}$ size, is one of the most interesting of perforated banner-stones. It contains two extra lateral holes, a feature never before seen by the writer in perfect implements of this kind.‡ Many notches occur on both sides of the specimen, and upon its face have been engraved zig-zag and tree-like parallel lines. It is made of gray soapstone; belongs to Mr. Zimmerman and was found near Kutztown, Pa.

*Polished Stone Articles, etc. W. M. Beauchamp, Vol. 4, p. 72.

†A similar object is shown in Polished Stone Articles, etc., Beauchamp, Fig. 189, and Stone Art. Fowke, Bureau of Ethnology, 13th An. Rep. Fig. 141, p. 122.

‡Many broken specimens found about here, have this peculiarity.

PESTLES, MULLERS, ETC.

These cylindrical implements, various in length, and sometimes flattened on their sides, here often formed supplementary parts of stationary or portable mortars.

In the possession of a selfish woman living not far from Allentown, Pa., is an interesting cylindrical implement upon which have been inscribed the following characters.



Fig. 339, S. 1-2.

This inscription, the writer was informed by Mr. Warren J. Schmoyer, of Alburtis, Pa., who, after considerable trouble, succeeded in seeing the implement, appears as old as the surface of the somewhat oval shaped cylinder. It is made of sandstone, 10 inches long, weighs 5 pounds and was found in the northern part of Lehigh county, in eastern Pennsylvania.

Mullers are numerous. They are almost always circular, with two flat surfaces, or one flat and the other slightly convex. Small mortars, or paint cups are found here but are not common.

BIRD OR SADDLE STONES, BOAT SHAPED IMPLEMENTS, ETC.

Ceremonial objects, either solid or hollowed out on one side with holes at each end bored from one side, are very rare in this section. In outline they are both rectangular and oval, with cavities often shallow, but in some cases so deep as to be shell like in appearance. Most of them were made of slate. Tougher stones were sometimes used in their manufacture. They appear to be more plentiful in the State of New York than in any other portion of this section.* Bird-stones of banded slate are rare here but frequent in Canada and New York.†

PIERCED TABLETS OR GORGETS, AND PENDANTS.

Another form of implements or ornamental weapons, variously used in ceremonial functions, and carefully finished, are pierced tablets. They are mostly made of slate, often of a harder and tougher, stone, and are pierced with one, two or more round holes, which in most instances have been drilled from both sides forming a funnel shaped perforation. Those containing two holes are plentiful, but specimens having only one hole or more than two are not often found. They occur in every portion of this section and are of many forms.

In New York‡ and New Jersey§ they are found in graves near the breast of the occupant.

*Polished Stone Articles, Beauchamp p. 61.

†The Bird-Stone Ceremonial, Moorehead¹.

‡Polished Stone Articles in N. Y., etc., Beauchamp, Vol. 4, p. 679.

§Stone Age in New Jersey, Abbott, Smithsonian Report, 1875, p. 327.

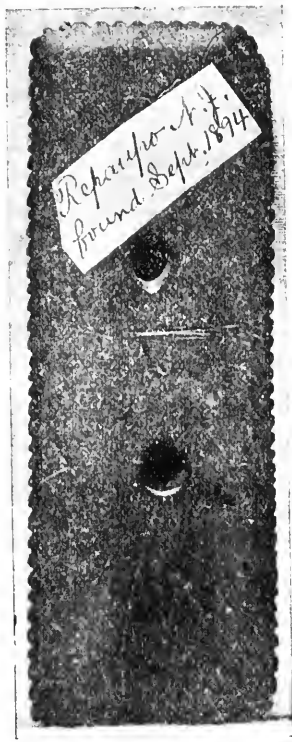


Fig. 340.

Fig. 340 represents a rectangular beveled tablet notched on all of its sides. Both perforations show signs of abrasion, which is an occurrence unique in these objects. It was found at Repanpo, N. J., and belongs to Mr. J. Preston Thomas, Whitford, Pa. S 1-1.

In Fig. 341, is seen an oblong tablet $\frac{1}{2}$ size with but one bi-concave perforation. It is made of a greenish colored slate and belongs to Mr. Brobst, Reading, Pa., near which place it was found. In the head, or upper part of the relic part of which is broken off, were cut a number of micks or tally marks, either for ornament or perhaps to commemorate some tragic occurrence.

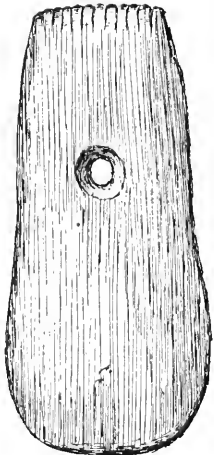


Fig. 341.

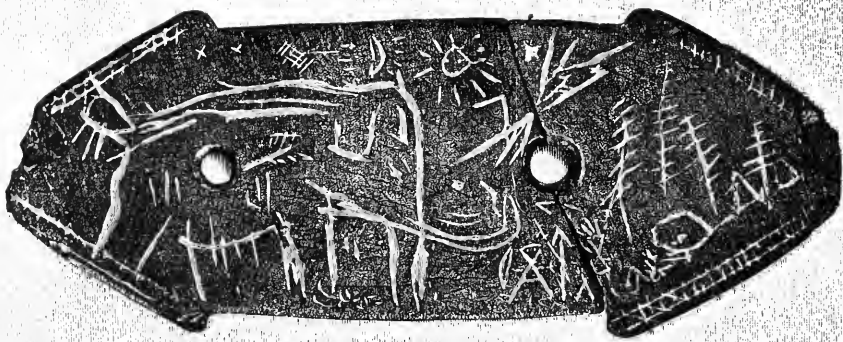


Fig. 342. S. 1-1.

Fig. 342 represents, full size, one of the most interesting engraved perforated tablets ever found.* It is in two parts as figure shows. It was found on the surface in a field $4\frac{1}{2}$ miles east of Doylestown, Bucks county, Pa., by Mr. Bernard Hansell, and now belongs to Mr. Henry Paxon, of Philadelphia. The larger portion of the specimen was picked up in the spring of 1871. After many fruitless searches the missing portion was found by the same person at the same spot 9 years afterward. The engraving on the implement represents an elephantine animal, probably the hairy mammoth, in combat with a number of Indians. The other side of this object contains many engravings of animals and other objects.

*For a full description of this unique implement see: *The Lenape Stone or The Indian and the Mammoth*; H. C. Mercer. Every collector and archaeologist should own this valuable publication.

These ornamental objects are rather rare. They appear to be more plentiful in the state of New York than in any other part of this section.



Fig. 343 represents a rare arrow-head shaped perforated specimen, full size, found near Reading, Pa. It is made of red shale and is partly chipped. Other parts of it are ground.

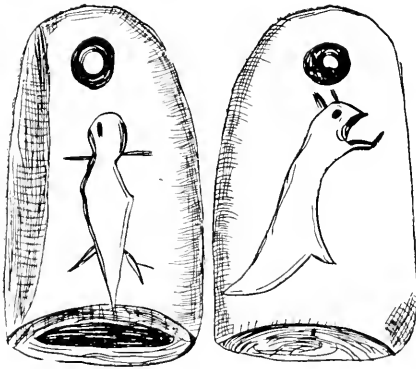


Fig. 344 shows the two faces of a black perforated nicely polished horn-stone specimen, full-size, upon which have been engraved two animal-like figures. This object was found near Laury's Station, Pa. and belongs to Mr. Austin E. Bush.

Another very interesting perforated specimen, triangular in form, is shown in Fig. 345. It is made of a dark slate. Upon its surface are cut a number of lines which meeting form angles. Two of its sides contain a number of notches. It was found near Virginsville, Pa., and belongs to Mr. John Brobst, Reading, Pa. S. 1-1.



PENDANTS, CUPPED OR PITTED STONES, ETC.

These implements round, oval and often irregular in form with one or more depressions on their sides, are plentiful everywhere. Their uses can only be conjectured. Those of oval or rounded shape are often battered at each of their ends which seems to indicate that they were used as hammer stones. Another theory is that they were used as a pivot for a rotating fire drill or for perforating other stone objects. Col. C. C. Jones calls them nut stones, especially those having more than one depression.*

Plummets are, in most instances pear-shaped implements, symmetrically made from a tough and close-grained trap stone, and well finished. Some are grooved and others are perforated at their smaller ends. Once in a while is found one which has neither groove nor perforation.

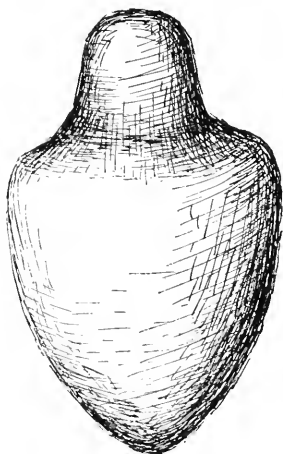


Fig. 346.

Fig. 346 represents one of these plummets found near Kutztown, Pa. It belongs to Mr. Deisher.

Another interesting plummet made of greenstone and grooved is shown in Fig. 347. The groove shows no sign of abrasion. It has on one of its sides a cavity as shown in figure. The specimen belongs to Lehigh University at Bethlehem, Pa. It was found in the lower part of Lancaster County, Pa.



Fig. 347.

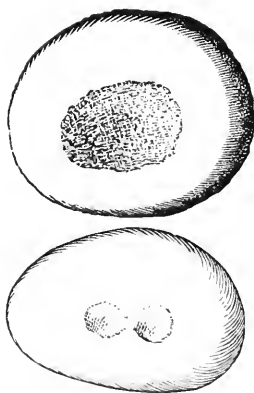


Fig. 348 represents two of these mysterious implements, (cup stones) one rounded and the other oval, from the collection of Mr. Gerner, found near Muncy, Pa.

BEADS.

The Indians made beads of stone, bone, clay and wood. Those of wood have disappeared, and those of stone and shell are most abundant at the present time. Those of clay are rarely found. Shell beads were used for

*Antiquities of the Southern Indians, p. 315.

ornamental purposes, as money, and to make belts which were used on ceremonial occasions. Beads made of shell were both made in the forms of cylinders and discs.

Bone and shell beads and ornaments are shown on page 141 of this work.



Fig. 349.

Three beads $\frac{1}{2}$ size of steatite are shown in Fig. 349. The smallest found near Kutztown, Pa., belongs to the collection of Mr. E. D. Zimmerman. The grooved specimen was found in Virginsville, Pa., and belongs to Mr. J. Boyer, of that village. The notched disc or bead, also found at Virginsville, belongs to Mr. Deisher.

HAMMER STONES.

So well known to every archaeologist and collector is this common implement that figures of them are not necessary. They vary very much in size. The writer has found them weighing from a few ounces to more than five pounds. They were undoubtedly used in flaking flint tools, and from continual use many of them have attained an almost globular form. They are made of jasper, quartz, quartzite and other tough stones.



Fig. 350, represents a partly grooved hammer of sandstone having also on one side a shallow cavity. It was found near Allentown, Pa., and belongs to the writer.

THE WOMAN'S KNIFE.

These semi-lunar shaped knives only used by women and which correspond to the present saddler's knife, are a pattern derived from those used by the Eskimo. Although quite numerous in New York, in New Jersey and Pennsylvania they are exceedingly rare.

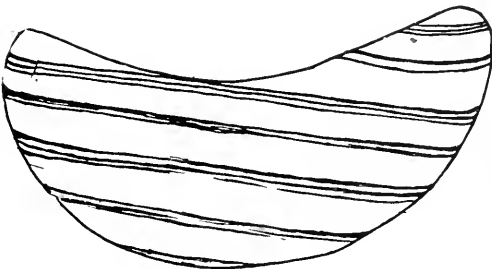


Fig. 351 represents one of these implements made of banded slate. It was found near Amityville, New York, and belongs to Mr. S. R. Austin.

POTTERY.

The Indians of this geographical section knew how to make terra cotta ware. The state of New York has furnished many nicely ornamented vessels still in perfect condition. In Pennsylvania and New Jersey but few perfect pots have been found. Fragments are, however, plentiful. A number of these showing different designs are figured here. S. 1-2.

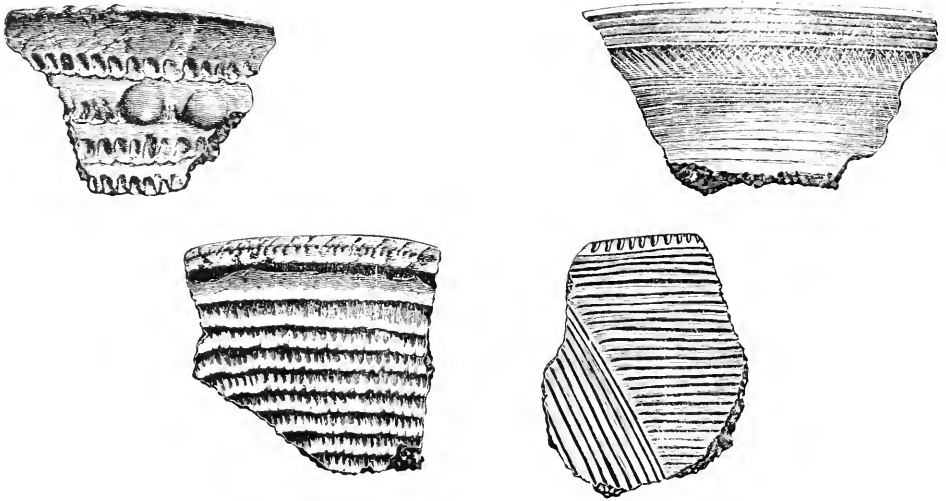


Fig. 352.

GROOVED AXES.

The Indians made a general use of the implements known to every one as grooved stone axes. Not only have we authorities who cite this fact, but it is also proven by the many specimens found in every section of the United States.

The Missionary Loskiel states that the hatchets were wedges made of hard stones, 6 or 8 inches long, sharpened at the edge and fastened to a wooden handle. They were not used to fell trees, but only to peel them or to kill their enemies.*

Many of these objects are found with rather blunt edges and this causes Dr. Rau, the late learned author and curator of archaeology in the Smithsonian Institution, to claim that they were not used to cut down trees, but merely served in a "girdling" process from which the trees died, and were afterward leveled with the aid of fire.†

Dupratz says that in using axes it was impossible to cut down trees but merely to bruise them close to the ground so that fire placed there might more readily destroy the bruised fibres.‡

*History of the Mission of the United Brethren, p. 54. London, 1794.

†Smithsonian Contributions to Knowledge No. 287, p. 21.

‡Histoire de la Louisiane, Vol. 1, p. 166, Paris, 1785.

Adair tells us that when with the Cherokee Indians he saw them deaden the trees by cutting through the bark, and that then they burned them when they either fell by decay or became thoroughly dry.*

But a short time ago the writer had in his hands a finely wrought grooved diorite axe found near his home, with a cutting edge almost as sharp as our iron axes of today. During the sharpening process the edge was finely polished. Many such sharp axes have been found. Prof. George H. Perkins, of the University of Vermont, informs us that the explorer, Champlain, in his account of a journey which he took with a party of Algonkins in 1609 mentions several times that stone axes were used for felling trees, and the account shows that the cutting must have been done with somewhat of expedition. So well did they understand the felling of trees with their grooved stone tools that in a few hours a sufficient number of trees were leveled to form a barricade, which was always the custom when supposed enemies were near, through which 500 of them would not be able to break without much difficulty and great loss of life. In another passage he speaks of the Iroquois as cutting down trees for a similar purpose.†

In a most interesting account Lafitau tells his readers that stone axes were in use in America from time immemorial. "They are made of a kind of very hard and tough stone and it requires much labor to make them fit for use. They are prepared by the process of grinding on a sandstone, and finally assume, at the sacrifice of much time and labor, nearly the shape of our axes, or of a wedge for splitting wood. The life of a savage is often insufficient for accomplishing the work, and hence such an implement, however rude and imperfect it may be, is considered a precious heirloom for the children. When the stone is finished the difficulty of providing it with a handle arises. They select a young tree, of which they make a handle without cutting it by splitting one end and inserting the stone. The tree grows, tightens around it, and incloses it so firmly that it hardly can be torn out.‡" A wythe of proper length perhaps two feet was bent around the groove, or a forked sapling served the same purpose which was firmly bound where both ends met with strings of raw hide or material of some other kind.

Their implements vary greatly in size and weight, the smallest probably playthings being not more than a few inches long, weighing but a few ounces, and the largest often more than a foot in length and weighing as much as 26 pounds. So heavy an axe was recently found in Pennsylvania.

With reference to their grooves they may be classified as follows: 1st those in which the groove, which is invariably near one end,§ completely encircles the implement; 2nd, those in which the groove appears only on the two broad sides, the other faces being often flattened; 3rd those in which three sides are grooved, the fourth face being frequently flattened

*History of the American Indians, p 405, London 1775.

†The American Naturalist, Vol. XX, p. 339.

‡Moeurs des Sauvages Ameriquains, Vol. 1, p. 110.

§Here are sometimes found cobble-stone axes, always showing very rough usage. Their grooves are almost in the centre of the axe.

along which when the axe was hafted a wedge was driven to better secure the handle; 4th, those which have two grooves side by side; and 5th, those which are simply notched. The latter are, so far as the writer knows, roughly made, often merely chipped, and sometimes but rarely made of a silicious material. In most of the specimens of the above classes grooves are cut into the body of the implement. There are, however, specimens which show on both sides of the groove, which reaches only the body of the implement, a prominent ridge made to add more strength to them.



Fig. 353 represents a notched and flaked axe of quartzite shown $\frac{1}{2}$ size. The notch was first flaked and then rounded by the process of pecking. Axes of this class are not often found here. It was found near Kutztown, Pa., and belongs to the Deisher collection.

ARTICLES OF BONE IN NEW YORK.

The last few years have been prolific in articles of bone in New York. At Onondaga and Oneida lakes hundreds of bone harpoons have been found. Most of these have several barbs on both sides, variously arranged. Some are pointed at each end. The larger variety, with barbs on but one side, occur mostly on recent Iroquois sites, but the other kind occasionally appears with them. Barbed bone fish hooks have been found in Onondaga and Jefferson counties. One of these is from a site occupied about the year 1600. All the others seem a little earlier, but the known age of one gives a hint as to that of the rest. The barbless hooks are smaller, but apparently of the same period. Bone knives of beautiful form and finish are found in several places,

sometimes with perforations. Among other articles a few bone pipes appear of a recent date, and many bone combs.

A carved bone object, much decayed and parts of it missing, was obtained from a grave near Lock Haven, Pa. It represents the human form, and shows signs of ornamentation. Another is a bone point which still retains a high polish and which was intended for a harpoon spear-head. This object is triangular in section almost to the point where it is somewhat rounded. Its shaft end is broken off.

A bone awl or perforator, 6 inches long, was also found near this town. It was somewhat decayed. These objects belong to Dr. Stewart.

A finely carved antler made by a Delaware Indian, is figured by Dr. C. C. Abbott. He says "It is a combination of representations, all realistic and absolutely perfect in this way. The human face is a marvel of aboriginal skill. The series of lines and dots are regular, and the faintly outlined snake's tongue is true to nature; as is also the end of the object, which represents with marked fidelity the rattlesnake." He does not tell us where this fine object can be seen.

BIBLIOGRAPHY.

Below are given a list of books treating on the archæology of this geographical section. I have omitted some which are already mentioned in my text.

- | | |
|-----------------------|--|
| Marquis de Nadaillac. | Prehistoric America. |
| Squier, E. G. | Aboriginal Monuments of the State of New York. |
| Holmes, W. H. | Stone Implements of the Potomac—Chesapeake Tide-water Province on Rep. Bur. of American Ethnology, Vol. 15 |
| Wilson, Thomas. | Arrow-points, Spear-heads and Knives of Prehistoric Times. Report U. S. National Museum, 1897. |

Numerous interesting papers by Mr. H. C. Mercer, Dr. C. C. Abbott, Dr. D. G. Brinton, Mr. Stuart Culin, Mr. Charles Lanbach, Mr. E. A. Barber. Smithsonian Contributions to Knowledge. Reports of the Bureau of Ethnology. Reports of the Smithsonian Institution and U. S. National Museum. Reports of the Museum of the University of Pennsylvania. Reports of Peabody Museum, Cambridge, Mass.

Before closing that part of the work allotted to him the author wishes to express his grateful acknowledgment to those who so kindly assisted him in his labors. It is to be hoped that they will find their reward in a conviction that they have aided, in a manner, to advance the ennobling and fascinating science of Archæology. Especially does he desire to mention Mr. H. C. Mercer, of Doylestown, Pa., Dr. Thomas Wilson of the U. S. National Museum, Mr. W. M. Beauchamp, of Baldwinsville, N. Y., Mr. A. J. Waychoff, of Waynesburg, Pa., Mr. Stewart Culin, of the museum of the University of Pennsylvania. Prof. Edward H. Williams, of Lehigh University, Bethlehem, Pa., Mr. Charles Lanbach, of Reigelsville, Pa., Mr. H. K. Deisher, of Kutztown, Pa., Mr. Thomas H. Windle, of Coatesville, Pa., Dr. T. B. Stewart, of Lock Haven, Pa. and to Prof J. R. Merkel, A. M., of Muhlenburg college, Allentown, Pa., who so generously gave his valuable time in editing the many pages of the author's manuscripts.



SECTION VII.

ARCHAEOLOGY OF CALIFORNIA

DR. LORENZO GORDIN YATES, F. L. S., ETC.

SOUTHERN CALIFORNIA

In travelling southward from San Francisco, towards Point Concepcion (the northern limit of the "Lotus Land" of California), we see evidences of change in the character of the aborigines.

These changes are so marked that, we soon become convinced that the Indians of this region were of a different race from those which inhabited the central and northern portions of the state, and as Point Concepcion marks the boundary line of the northern and southern floras and faunas, so it seems to be the point from which the line of demarkation may be traced between the race, which seems to have been of Asiatic origin, extending from Alaska to this point; and the southern race which is supposed to have migrated from Central America.

There was, however, more or less intermingling, lapping over, or intrusions of the two races as is the case with plants and animals. In the case of aboriginal man, he being migratory and less influenced by local surroundings, and climatic conditions, as for instance, man born in temperate zone can migrate to, and flourish in, either the frigid or torrid zone, while many animals, plants, etc., generally thrive only under conditions similar to those of the place where they originated, except under artificial conditions,—consequently races of men contiguous to each other, are much more liable to intermix and overlap their original dividing lines.

In this instance the dividing line seems to have been from Point Concepcion, northeasterly to the Tulare region and Sierra Nevada mountains.

The tribes of the interior were more nomadic, and the relics of the Tulare and Upper San Joaquin regions show a more marked admixture of the two races than elsewhere.

The Indians of the Tulare Lake country, made annual excursions to the Bay Region and the sea coast, and some of their trails may still be traced to the Bay of San Francisco. They also had trails across the San Rafael and Santa Inez mountains, to the Santa Barbara coast and southward, where they obtained the stone ollas, cups and bowls occasionally found in the Tulare country.

These excursions had for their object, barter with the coast Indians, and the collecting of marine shells for shell money and ornaments. They also laid in supplies of sturgeon from the Bay of San Francisco.

The camping places along these trails may still be seen, and an occasional relic found there, but they furnish more indications of what the

temporary occupants used as food, and of the rough material they transported to their regular camps. At various points along these trails pictured rocks, caves with Indian pictographs in colors, and monumental cairns may be seen.

The great centre of aboriginal population, seems to have been the coast region along the line of the Santa Barbara Channel, and the Islands distant from twenty-five to one hundred miles from the coast.

When in 1542 the famous Portuguese navigator Cabrillo sailed from the west coast of New Spain (Mexico), and discovered this region, he found the islands thickly populated, as was also the adjacent coast.

The historian of Cabrillo's expedition says "they anchored opposite a valley, very beautiful and very populous, the land being level, with many trees. * * * Here came canoes with fish to barter, they became great friends. * * *. They pointed out to us the villages, and named them by their names." These navigators inform us that, they found seventeen populous villages or towns within a distance of eleven miles along the shore of the Santa Barbara Channel. The islands were thickly inhabited by tribes who, though speaking different languages or dialects, were closely related to those of the mainland, and were branches of the same family or stock.

HABITATION.

The mildness of the climate of the islands and mainland occupied by these people, was such that very little, if any, shelter was needed during the dry season. Caves and rock shelters were convenient and plentiful for stormy weather, but in addition to these, houses were built of the ribs of whales by placing one end in the ground, and bringing them together at the top, then covering the whole with seal-skins sewed together; this formed a wind and rain-proof covering; an opening was left in the apex of the cone. When completed the building resembled an immense bee-hive.

I have found the remains of some of these houses, where the portions above ground had decayed, the lower ends of the whale bones remaining in the ground in a good state of preservation.

UTENSILS.

They manufactured and owned more household utensils, tools, weapons and ornaments, of better material and superior workmanship than tribes of other regions, and as these ornaments represented money, and were largely used as such, the amount of marketable property owned by them, represented the comparative wealth of the people. Being less nomadic than many other tribes their utensils were made for continuous and permanent use. The region they occupied, furnished an abundant supply of food material, easily obtained, giving them plenty of time for the manufacture of material representing the ornamental or artistic phase of savagery.

Their weapons and household utensils, unlike the generality of the coast Indians give evidence of taste in the selection of material, and skill in their manufacture.

They used few baskets; their cooking utensils were worked out of solid rock, of a talcose character, similar to soapstone, easily worked, but capable of withstanding the action of fire. They cooked their food in these vessels, placed on the fire, instead of cooking by means of heated rocks dropped into the water, or food contained in water tight baskets, as was the custom with other tribes. Some of these vessels called ollas were symmetrically made, and sometimes ornamented with incised lines, or by inlaying with shell beads around the rim. These ollas were sometimes used for mortuary purposes by inverting them over the heads of their former owners. One fine specimen in my collection, I found in a burial mound near Santa Barbara, it was some three or four feet below the surface, and in an upright position, covered by a flat rock, and contained the remains of a child of two or three years of age, and some badly decayed shell ornaments. See Fig. 354.

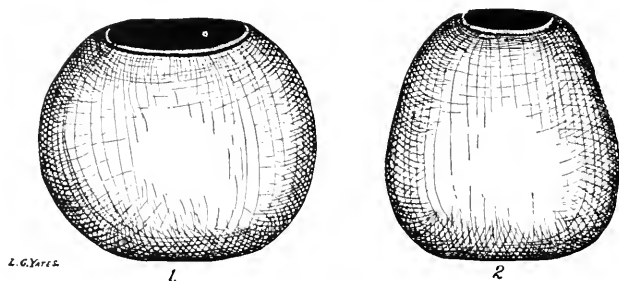


Fig. 354. Stone ollas; Yates' collection. S. about 1-10.

STONE CUPS AND BOWLS.

Their drinking cups and other vessels not intended to be placed on the fire, were made of serpentine highly polished and sometimes elaborately ornamented.

The material from which these vessels were made is found in great abundance on Santa Catalina Island. The outsides of the vessels were worked out of the ledge in situ, and then detached, and the interior worked out by means of stone chisels and scrapers. Some of these tools were attached to wooden handles by means of asphaltum.

Santa Catalina Island seems to have supplied all the vessels of this character found on all the islands and the adjacent mainland. They were transported by canoes and rafts which were covered by brush and tule (a species of rush).

FOOD MATERIAL.

The shores furnished an abundant supply of mollusks, crustaceous and other invertebrate animals, both as to quantity and variety. The waters of the channel supplied an abundance of fish at all seasons, and at certain seasons it teemed with whales, which during their periodical journeys used the channel for a resting place or playground, and even in my time I have seen them in large numbers. Seals, sea-lions, sea-elephants, sea-otters and other marine animals were abundant, while the land supplied pine nuts,

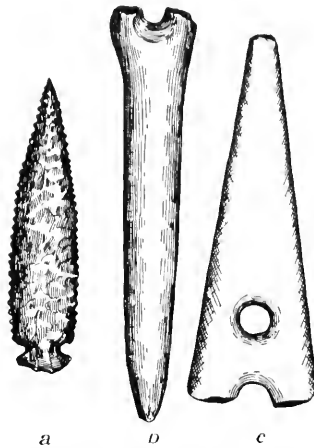


Fig. 355. S. 2-7.

a. Fine serrated obsidian spear-head Lake Co., Cal.

b. Spear-head of argillite, polished, from under Table Mountain, Tuolumne Co., Cal. $8\frac{3}{4}$ inches long.

c. Spear-head of hard, close-grained trappeau rock, polished, same locality as the last. $8 \times 2\frac{2}{3}$ inches.

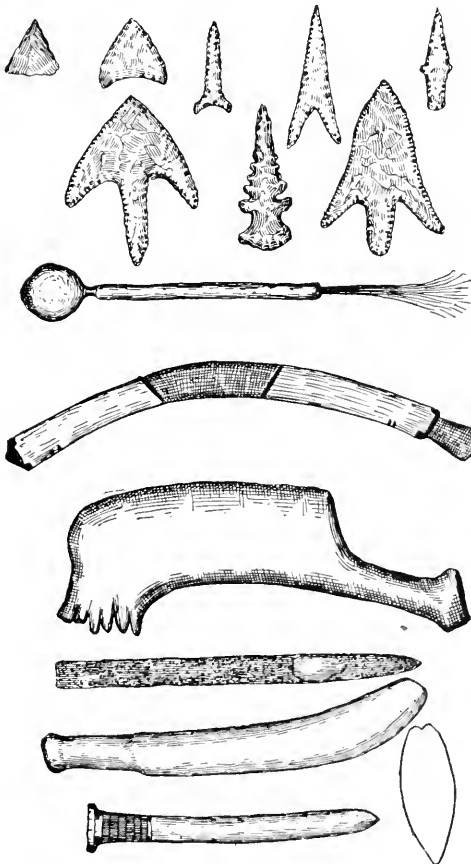


Fig. 356. S. varies 1-2 to 1-11. At the top, Obsidian arrow-points from Los Angeles Co.

Next, Apache war club of rawhide shrunk onto a round stone. Many of these round stones have been found on the village sites.

Next, Throwing stick, shaped like a boomerang used for killing rabbits etc.* 2 feet by $1\frac{3}{4}$ inches.

Next, Battle-axe or war club, made from outer portion of lower jaw of whale, evidently very old; unique. Santa Rosa Island, Cal., in Smithsonian Institution $17\frac{1}{2}$ by 6 inches.

Next, Knife blade of hammered copper, from a grave in the Santa Inez mountains. The only copper weapon I have seen in southern California. In the collection of Geo. H. Gould.

Next, Sword or Ceremonial, of fine-grained sandstone, with groove running the entire length of back. San Miguel Island (Dreyfus Collection.)

Next, Sword of wood, with handle inlaid with abalone shell (*Haliotio rufescens*) See Wheeler's Report Vol. VII. p. 232. $18\frac{1}{2}$ inches.

*See Dr. Hoffman's Notes to Hugo Reid, "Account of the Indians of Los Angeles county, Cal." in Bulletin of Essex Institute. Vol. XVII. p. I.

acorns; wild cherries, berries and seeds of various kinds, deer, elk, and a variety of other quadrupeds. Water-fowl supplied eggs in abundance, and their skins were used for clothing.

WEAPONS.

Consisted of war-clubs, spears, bows and arrows, javelins (?) throwing sticks and harpoons. They have been found in such variety of forms that in my "Aboriginal Weapons of California" (in manuscript) I have figured more than three hundred different forms. Nearly all the forms of weapons and implements of flaked stone found in other regions, have been found in southern California, besides many forms peculiar to this region, but unfortunately, while there have been a great many collectors, the great majority of them collected for coin, and tons of material which would have been invaluable to the museums of this coast, have been sold to enrich the museums of the East and Europe, and to tourists and travellers from all parts of the world. Hence, one of the richest known localities for prehistoric relics, has been practically depleted.

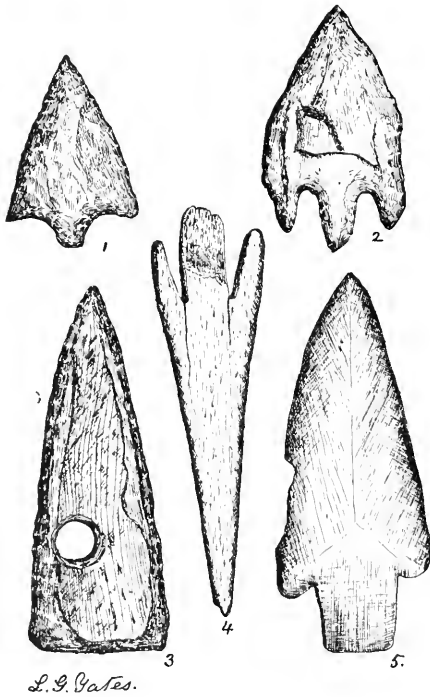


Fig. 358. S. 1-2. Fishing spear-head of silicified shale. San Nicolas Island (Yates collection.)

4. Harpoon of bone (whale) San Nicolas Island.

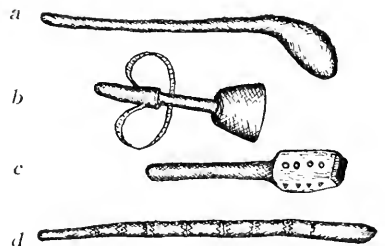
5. Fishing-spear of a peculiar olive-gray indurated shale, polished. San Nicolas Island, (Yates collection).

Fig. 359. a. Tomahawk of wood, New South Wales.

b. War club used by the Pah-Utes and Mohaves.

c. War club Southern California, (after Hoffman).

d. War club, Southern California, (after Hoffman) 34 by 11½ inches. From Smithsonian Reports; much reduced.



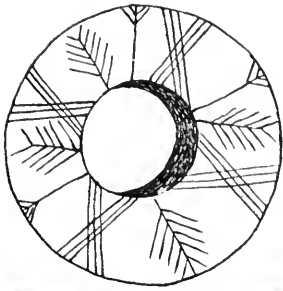


Fig. 360. S. 1-2. Club head of stone, ornamented with incised lines. Southern California.

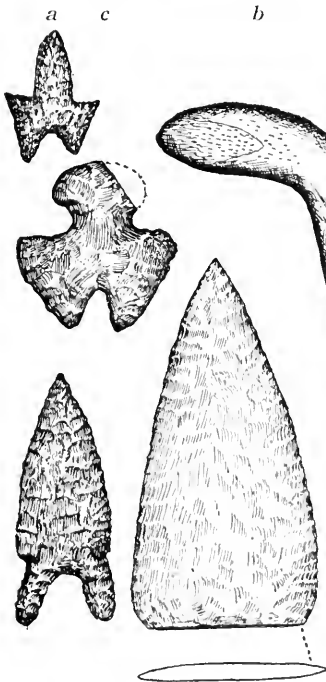


L. G. Yates

PERFORATED STONES AND DISCS.

These, like many other prehistoric implements were doubtless used for a variety of purposes as indicated by the differences of form, size and material. Some of sandstone, with the holes countersunk at both ends; others of serpentine, many of which are symmetrical in form and highly polished, some have tapering perforations without counter sinking. They are of all sizes from the flat disc of 8 to 10 inches in diameter to the small stone bead of less than half an inch.

They have been found in such abundance in southern California, espec-



L. G. YATES Del.
c

d

Fig. 361. S. 1-2 to 1-8. *a*, Scraper, of flint or chert. These are found in great variety of form, some resembling animals in outline.

b. Tomahawk or club, made from the root of a live oak tree. A very old Indian whom I interviewed more than thirty years ago, said that it was used for killing sturgeons when they came up the creeks and sloughs at certain seasons. (Yates' collection.) Found in "salt marsh" Bay of San Francisco. 13 by 9 inches.

c. Knife and scraper combined, obsidian. (Dreyfus collection.)

d. Fishing-spear or harpoon head of white chalcodonic quartz, very thin (section at "A"). Santa Rose Island (Dreyfus collection.)

NOTE—The Indians of Alaska, formerly used harpoon heads of the same form and character as "*d*" for harpooning whales and other large marine animals. See "Ninth Annual Report of the Bureau of Ethnology," pp. 218 to 241. It is probable that the former inhabitants of our islands used similar weapons for like purposes.

e. Scraper and knife combined? Obsidian.

cially on the islands, that they may be found in the majority of collections of Indian relics. In addition to the many uses assigned to them, I think some of them were used for smoothing and polishing the shafts of spears and similar implements of wood, and the "cigar-holder" pipes of serpentine and steatite for which this region is noted.

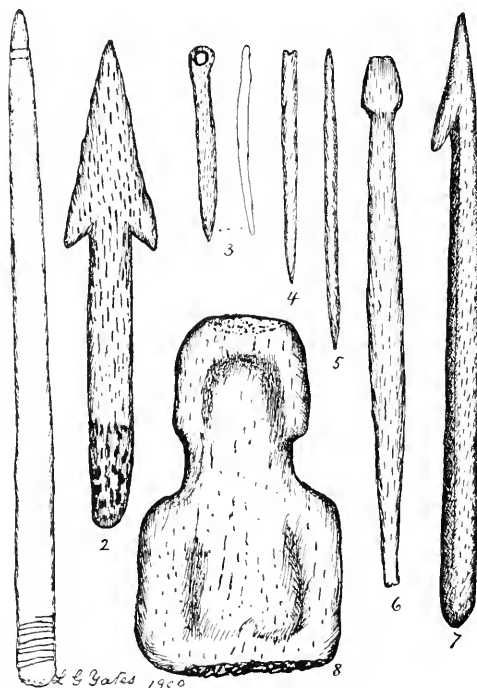


Fig. 362. S. 1-2. Hair-pin, of bone, highly polished, used for ornament for the head, the ends show grooves to hold the cords by which feathers and shell ornaments were attached. San Miguel Island. 9½ inches in length

2. Harpoon-head of bone (whale?), with some of the asphaltum used in attaching to the shaft remaining. San Nicolas Island.

3. Needle of bone. Santa Cruz Island.

4. Needle of bone, head broken. San Miguel Island.

5. Bone implement. San Miguel Island.

6. Wand or charm stick. (Phallic?), used by Medicine Men, bone of cetacean, 11 inches long.

7. Harpoon-head, of bone, barbed on one side. San Nicolas Island. 9 inches long.

8. Effigy of human figure, carved out of whale's bone. San Nicholas Island.

Fig. 363. S. 1-3. Saws, of bone, called "Sa-chos," by the Napa Indians. Had been broken and buried with their owners, as was the custom; made from scapular bones of deer or elk. The portions grasped by the hands of the workmen are worn to a glassy smoothness, showing that they had been in use for a long time.

One of them is of the "Lightning Tooth" pattern of modern saws. From ancient graves in Alameda county. (Yates collection).

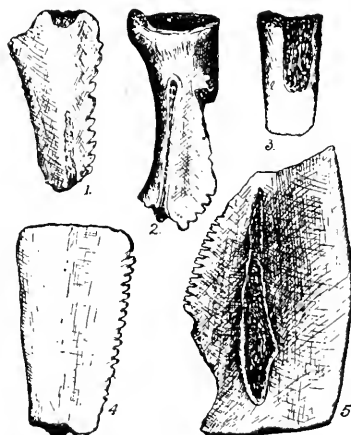


Fig 364. S. 1-1. 1. Fossil ground to resemble charm stone.

2. Two views of a peculiar stone of gray amorphous talc, with evidence of a cord having been tied about the centre, showing the cord to have been dipped in soft bitumen. San Nicolas Island.

3. Stone implement of crystalline talc, one hole drilled at each corner, and one in centre of each side, the centre one on upper end and on upper corner drilled straight through. The other holes are drilled from face and edge, meeting and forming a right angle. San Nicolas Island.

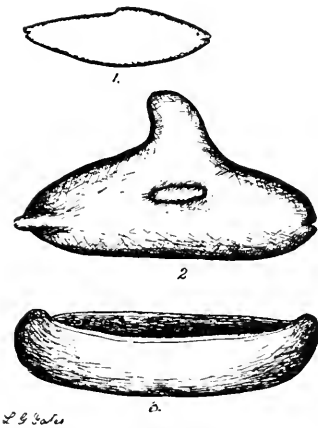
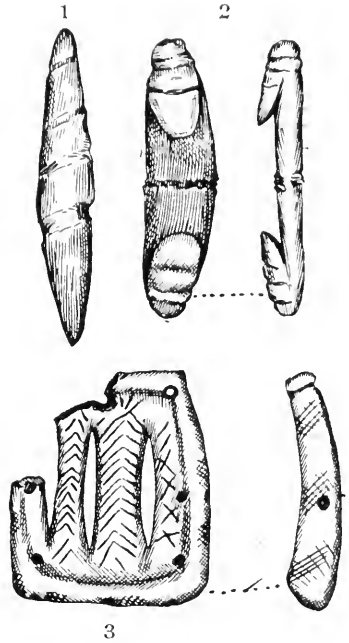


Fig. 365. S. 1-2. 1. Fish, made of slate, use unknown. Might have been a toy, amulet, ornament, or fetish. San Nicolas Island.

2. Stone figure of a killer whale, or "Killer," *Orca rectipinnis*, Cope? San Nicolas Island.

3. Stone canoe, probably used for ceremonial purposes. San Nicolas Island.

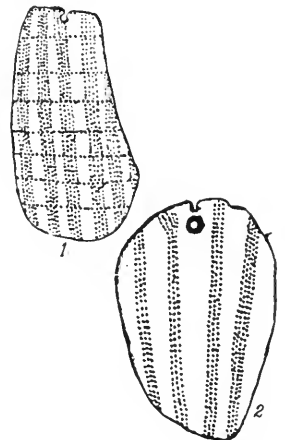


Fig. 368. S. 1-2. 1. Ornament of bone; Santa Barbara, Co.

2. Ornament of *Tivela* shell.

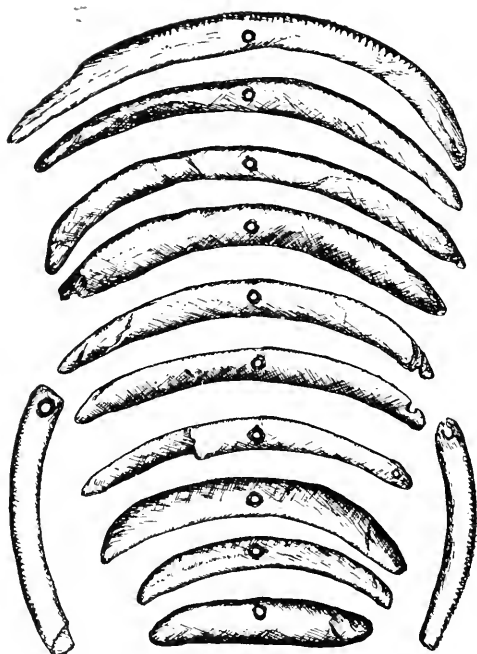
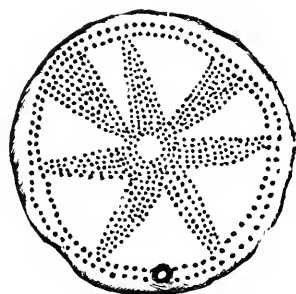


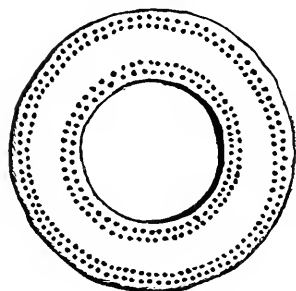
Fig. 366. Breastplate or ornament made of the lips of "Abelone" shells. (*Haliotis rufes-cens*.) edges ornamented, considerably decayed, and portions missing; unique. San Miguel Island. (Yates' collection.) S. 1-2.

Fig. 367. 1. Ornament? of shell of *Tivela crass-atelloides*, cone. Ornamentation representing an Echinus. Santa Barbara. (Dreyfus collection.)

2. Ornament, made from the same species of shell. (Same collection as above.) S. 1-2.



1.



2.

PIPES.

To the student of American history and Ethnology, the tobacco pipe, its forms, uses and history is an important subject. It not only figured

Fig. 369. S. 1-2. 6. Pipe of basaltic rock, same form as San Miguel Island¹ pipes. San Nicolas Island.

7. Pipe of steatite, peculiar form, general outline indicates that it was meant to represent a whale, holes drilled at different angles. See dotted lines. Santa Barbara. (Hayward collection.)

8. Pipe, of hard trap rock, from under Table Mountain, Tuolumne county, with stonespear-heads.

9. Pipe, of hard, slaty rock containing small black crystals; unique. Alameda county.

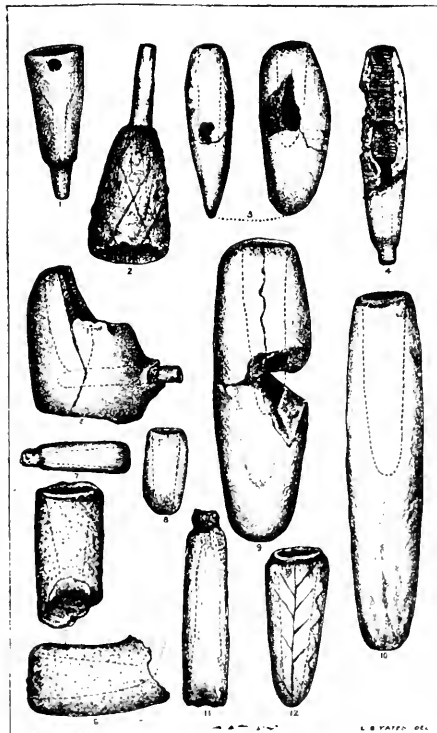
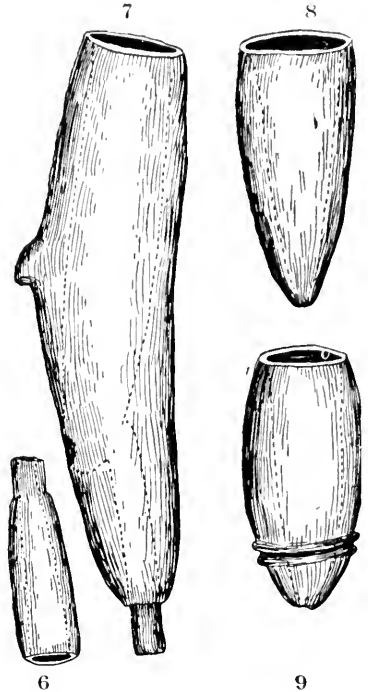


Fig. 370. S. 1-4. 1. Pipe of indurated bluish-gray talc. Santa Barbara county.

2. Pipe, of serpentine, burned, or of clay? striated or ribbed inside, caused by filing with narrow, thin, rounded pieces of sandstone, used as files; mouth-piece of bone. Southern California.

3. Same material as 1, probably broken in the process of making, side and back views; unique. Santa Barbara county.

4. Pipe, of same material as 1 and 3, sand worn on broken surface.

5. Unique pipe, of ochraceous indurated clay, probably made from a waterworn rock, broken at lower end; mouthpiece of bird's bone.

6. Pipe, of vesicular trachytic rock, broken at juncture of drill-holes, showing evidence of curvature at lower end.

7. Of same material as 1 and 3. San Nicolas Island.

8. Of same material. Santa Barbara.

9. Pipe, made from a boulder. Fragments found in different parts of a burial ground, probably broken in making. San Nicolas Island.

10. Unfinished pipe, of greenish crystalline talc. San Nicolas Island.

11. Of dark, mottled serpentine; belongs to same group as 1. San Nicolas Island.

12. Of serpentine, ornamented, similar in

outline to Table Mountain pipe. San Nicolas Island.

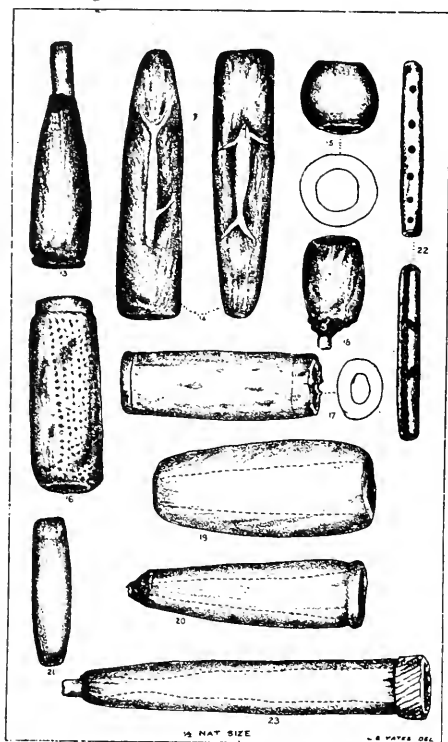


Fig. 371. S. 1-4. 13. Pipe of steatite, bone mouthpiece.

14. Pipe, of indurated talc, with figures of sharks in relief. San Nicolas Island.

15. Of serpentine, finely polished, possibly used as a pipe, as "18."

16. Pipe? highly polished and ornamented.

17. Pipe with lower end broken off.

18. Pipe, of serpentine, finely polished, bone mouthpiece fastened in with asphaltum. Were it not for the mouthpiece this would be called a bead.

19. Of similar material.

20. Pipe, of serpentine, finely polished; stem broken off close to the asphaltum. All the above are from Santa Barbara county.

21 and 22 belong to the series of Aboriginal Money and Ornaments.

23. Pipe, of serpentine.

Fig. 372. S. 1-2. 48. Drill of chalcedonic quartz, used for drilling "perforated stones," pipes, etc. *a*, and *b*, sections showing form. Santa Rosa Island.

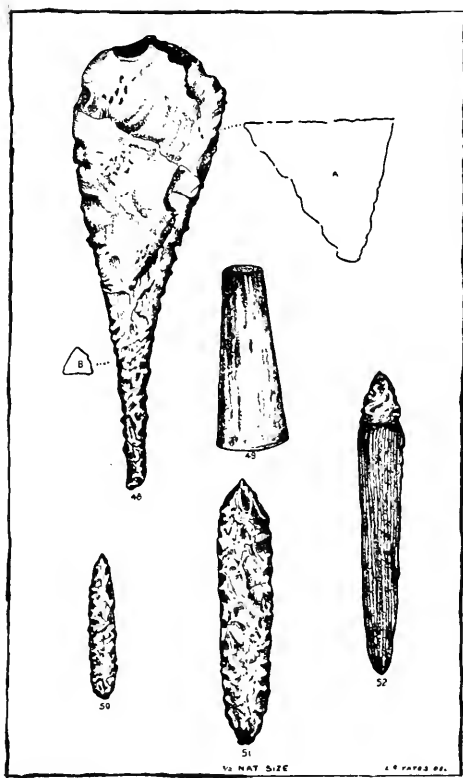
The rock of which this drill is made came from one of the Anacapa Island, some thirty-five miles east from Santa Rosa Island*

49. Unfinished pipe. San Nicolas Island.

50. Stone Drill, flint, probably used for drilling the bowls of pipes 51 for drilling the holes for the stems or mouthpieces. San Miguel Island, $8\frac{1}{2}$ inches in length; 3 inches wide.

52. Stone drill with wooden handle. San Nicolas Island.

—A number of fine pipes from this region are illustrated in Wheeler's "Report of Surveys West of the 100th Meridian. Vol. VII. Archaeology," and described by Dr. C. C. Abbott.—



*See Stray Notes on the Geology of the Channel Islands, by Dr. Lorenzo G. Yates. F. G. S. A., in Ninth Annual Report of the State Mineralogist, page 172, Sacramento, 1890.

largely in the social life, religious ceremonies and legislative councils, but was also one of the few luxuries of our aboriginal races and peoples. The possession of a pipe was second only in importance to weapons of war and the chase. Hence it is not to be wondered at, that much time and labor were expended in its manufacture.

The pipes made by the aborigines of southern California are as distinctly typical and characteristic as are those of any other region of like extent, and have been found in such numbers as to make the remark of the Marquis de Nadaillac, in "Prehistoric America," peculiarly applicable to this region. He says: "The inhabitants of America must have been sturdy smokers, judging from the number of pipes found in mound excavations."

Drills, perforators, awls, arrow-points, spear-heads and knives pass so almost imperceptibly from one to another class, that it is often impossible to make a distinction between them. Dr. Thomas Wilson, in "Arrow-points, etc., of Prehistoric Times" illustrates and describes a skull found by

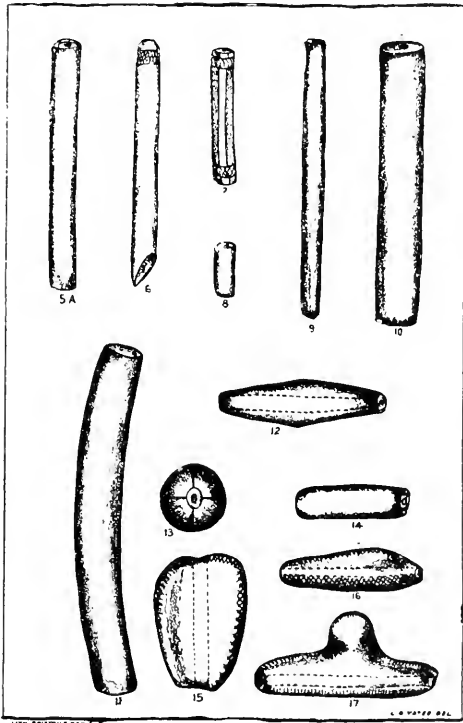


Fig. 373. S. 1-2. 5A. Shell money, made from *Pachydesma crassatelloides*, cour. Size of drill hole, one millimeter.

6. Of same material as the above, the unbroken end with a band of incised, ornamental lines.

7. Same material, hexagonal form.

8, 9, 10. Same material, drill-hole of uniform size throughout (1 mill), is curved to correspond with the outer line of the bead.

How, or by what means the aborigines were enabled to drill such small holes through the entire length of the straight beads has never been satisfactorily answered, and the question of how could they have drilled the curved hole in 11, is still more of a puzzle.

12. Unique form, drilled by a stone drill, each end bushed by a small bead cemented in with asphaltum.

13. Spherical bead, drilled and bushed in same manner as 12, with incised lines dividing the sphere into four equal parts. (12 and 13 were collected on Santa Rosa Island, and are now in the United States National Museum).

14. Drill-holes bushed with glass beads.

15, 16, 17. Made from shell of *Haliotis rufescens*; drilled, ornamented, herring-bone pattern.

me in Alameda County. Professor Berlin refers to it in his section (pg. 206.) Had this implement been found under other conditions, it would have been classed as an undoubted drill.

PREHISTORIC MONEY AND ORNAMENTS.

Beads of stone, shell and metal were among the most highly prized belongings of the aborigines, and by these, their social status was measured,

*Report of U. S. Nat. Museum for 1897, page 958.

and with them they purchased their wives and other personal effects, their necessities and luxuries.

I have already remarked that the ancient inhabitants of the coast region of southern California were exceptionally well supplied with property of this character, both as regards quantity and variety of form.

In northern California and farther north the *Dentalium* or "Tusk" shell, which came to hand ready made, formed the bulk of the purchasing medium, in central California; beads made from the shells of *Laxidomus* and *Olivella*, and in southern California with its greater choice of available material, many other species of shells were utilized for the purpose, as shown by the accompanying figures and description.*

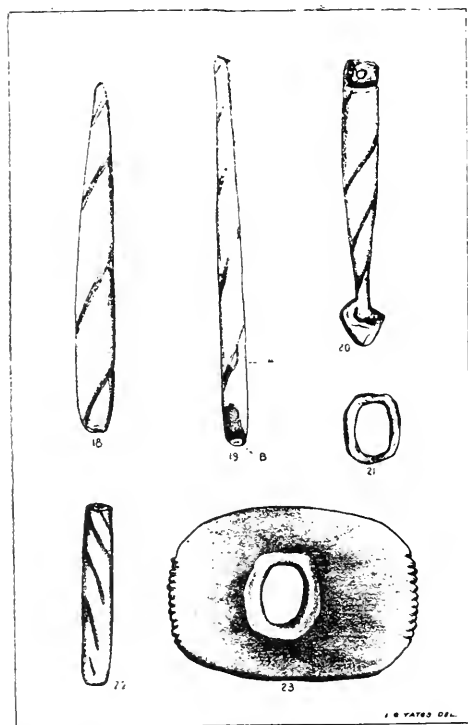


Fig. 374. S. 1-2. 18. Bead or money, made from shell of *Liphonalia Kellettii*. The aborigines of this region made their finest beads from the *columella* of this large spiral univalve, by grinding the whorls off, the spiral depression marking the line of growth were deepened, and the depressions thus intensified were filled up with asphaltum. A hole was drilled from the apex to connect with the umbilical canal at the base, or larger end, which was bushed by cementing a *Dentalium* or Tusk Shell, into the base, thus reducing the size of the opening to that of the drill-hole at the apex.

19. A fine specimen at *a*, a portion of the asphaltum has been broken away, showing the natural opening in the centre of the *columella*. At *b*, may be seen the *dentalium* bushing.

Mr. William H. Holmes† illustrates and describes one of these objects which he classes among "Pins," which is probably an unfinished bead.

20. Pendant or ornament, made from shell of *Pomaulax undosus*, wood, another large, spiral univalve, but without an umbilical opening, drilled transversely through the artificially flattened portion, and a por-

tion of the apex of the shell left on the *columella*.

21. Made by utilizing the natural opening in shell of *Lucapina crenulate*.

22. Bead made from shell of *Mytilus californianus* Con., the Californian Mussel, specimens of which I have found on Santa Rosa Island which were ten inches in length, and of corresponding thickness, the depressions represent the lines of growth. Mr. S. S. Haldeman in Wheeler's Report, Vol. VII., p. 266 credits this class of beads to the *Tivola*, (*Pachydesma*).

23. Made from univalve shell *Lucapina crenulata*. Other varieties of form were also made from this shell.

* Notes on the Aboriginal Money of California, by Lorenzo G. Yates, American Naturalist, January 1877.

† "Art in Shell of the Ancient Americans" in Second Annual Report of the Bureau of Ethnology. Washington, 1883.

Fig. 375. S. 1-2 40 to 54 inclusive, represent some of the many varied forms into which the aborigines manufactured the beautiful shell of the *Haliotis* (*Albelone*).

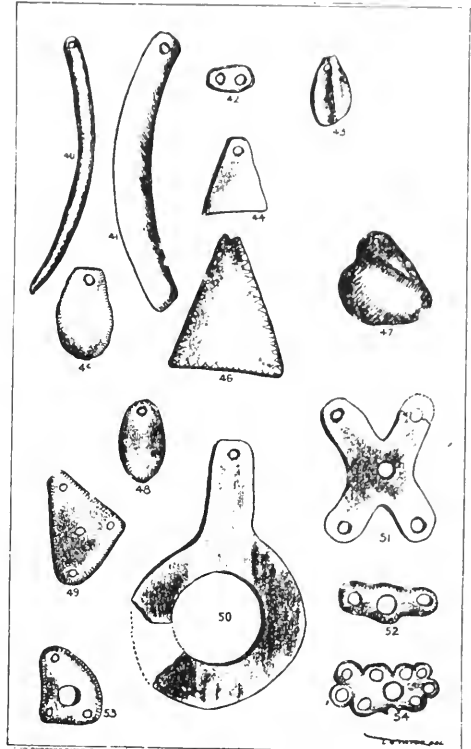


Fig. 376. S. 1-2. 55. Bead of bluish fluor-spar?

56. Bead of agate, shows marks of stone drill in drill-hole clearly distinguishing it from those of European manufacture.

57. Bead of serpentine. The cross-section at *a*, shows a groove around the edge.

58. Bead of fluor-spar?

59. Bead of agate.

60. Stone bead? with small holes drilled through the side. San Nicolas Island.

61. Similar without the transverse drill-holes.

62. Of serpentine, drilled from each end with small drill, the dotted lines show position of the drill holes.

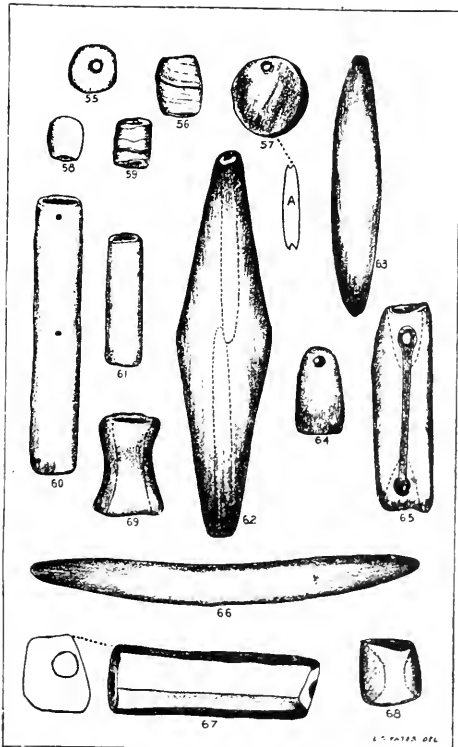
63. Of fine granular quartz, used perhaps for smoothing the interior of large beads.

64. Pendant? of chloritic rock.

65. Of dark blue metamorphic rock; use unknown.

66. Of serpentine. May have been used to finish or polish the interior of beads, like 60, and 61.

67. Of serpentine, hole of uniform size, unfinished bead?



68. Of same material as the last.

Fig. 377. 70, 71. S. 1-2. Beads made from hinge of *Hinnites giganteus*, gray.

72. Wampum, made from shell of *Laxidomus Nuttali*, cour., the dark lines show outside surface of the shell.

73. Implement used by Indians of Napa and Lake counties for drilling money or wampum.

74. Flint drill. Southern California.

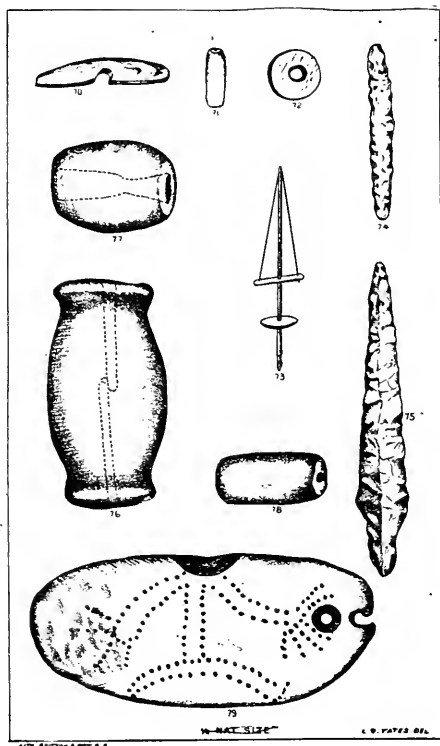
75. Drill of transparent quartz, probably made from a crystal.

76. Bead of serpentine, Santa Barbara county (Dreyfus collection).

77. Bead, of dark green serpentine, drilled from each end, but with differently shaped drills. San Nicolas Island.

78. Stone bead, used as money by the Indians of Lake and Napa counties, the material of which it is made resembles catlinite, the stone so highly prized by the aborigines of the older states for making pipes. Lake county, California.

80. Made from shell of *Tivela*. (Dreyfus collection).



FISH HOOKS.*

The extensive coast line of the mainland and islands of southern California furnished an abundance of fish to its former inhabitants, and large numbers of fish-hooks have been found in the graves and village sites, many of them, however, in such a poor state of preservation, that the laminae of the shell of which they are made fall apart when disturbed.

These objects were formerly called ornaments, and ear-rings, by some collectors and writers who argued that, the points were not in a position to catch or hold a fish. The natives of New Zealand use hooks of similar form (See 14, compare with 9).

Fig. 378. 1, 2, 3, 4. Implements from prehistoric caves in South of France, similar to those used by the Eskimos for catching water fowl. Objects of this character are often found in our mounds which were probably used for the same purpose, or for catching fish. They are used by attaching a line to the centre, the bone being baited with small fish, into which the implement is inserted lengthwise.

5, 6. Fish-hooks of chipped flint found in Sweden.

7. Fish-hook of shell from Samoa.

8. Hook made of tusk of wild boar. Swiss Lakes.

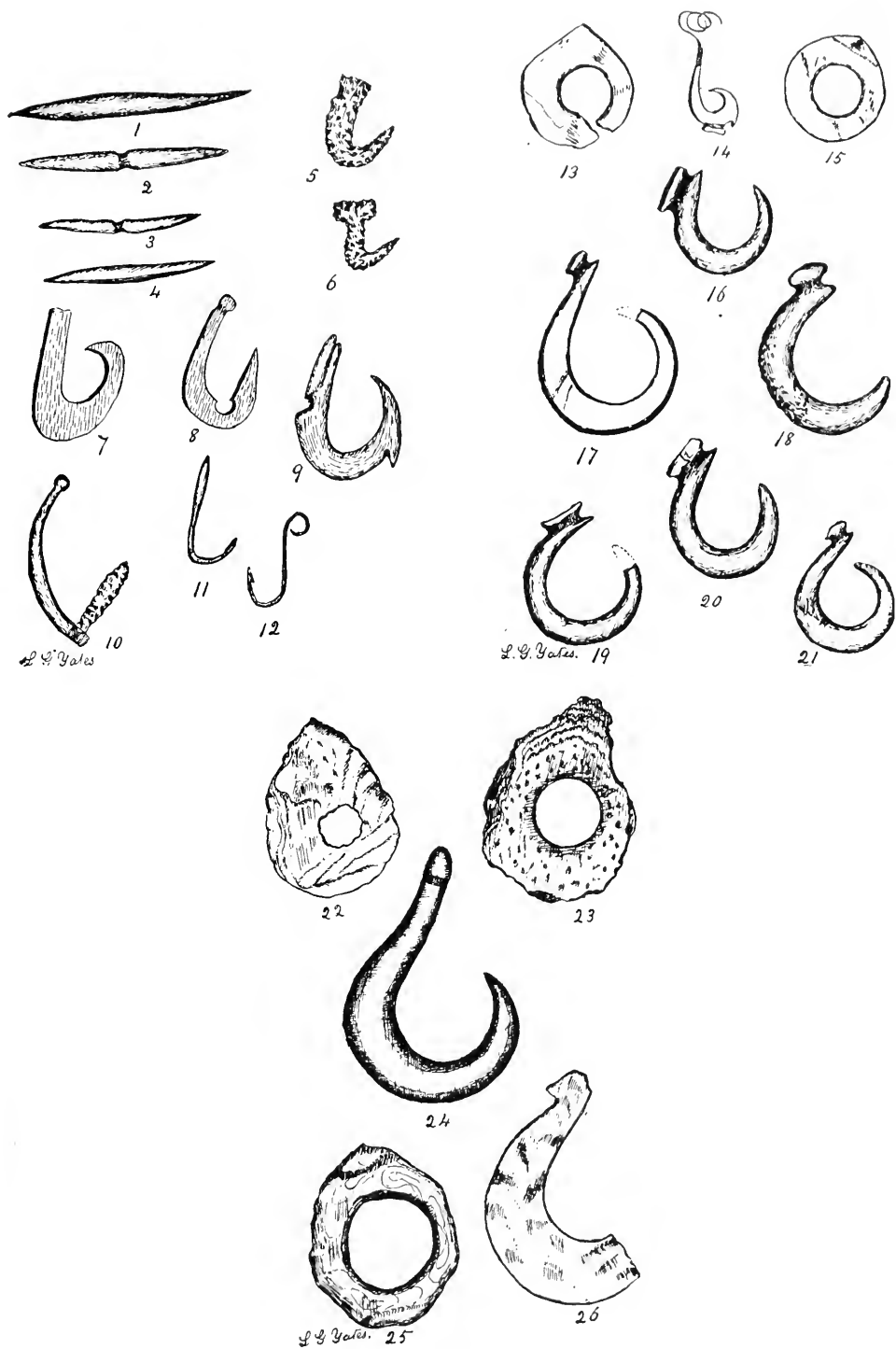
9. Fish-hook of shell, with barb to prevent the bait from slipping off. Southern California.

10. Fish-hook of flint and bone. Greenland.

11. Fish-hook of beaten copper. Wisconsin.

12. Fish-hook of bronze. Lake Morat, Switzerland.

*See The Evolution of Fish-hooks by L. G. Y., in Popular Science for March, 1899.



Figs. 378. S. 1-2.

13, 15, 22, 23, 25. Illustrate the method of manufacture of the shell fish-hooks of southern California.

14. Fish hook of the natives of New Zealand. Size reduced.

16 to 21, and 9. Represent shell fish-hooks which are exceptionally well made, and in a remarkably good state of preservation. San Nicolas Island, California.

24. Finely finished fish-hook of bone. San Nicolas Island.

26. Unusually large fish-hook of shell.

All the above described shell hooks are made from the shell of *Haliotis rufescens*, S. W. and belong to the Yates collection.

SCARIFICATORS,—“DELICATE SPLINTERS OF FLINT.”

In Vol. VII, of Wheeler's Report, p. 69, Dr. C. C. Abbott calls attention to a delicate form of splinters of flint, and suggests that “such fragments may have been used for the armature of bone harpoon-heads similar to those found in Europe.”

My first find of the implements was made while exploring in burial places on Santa Rosa Island, in the interest of the Smithsonian Institution in 1876, when our party found a deposit of perhaps a quart of these implements, (which were, however, nearly all stolen from us). They were finely made of yellowish-brown jaspery, or flinty rock. They were all together when found, having evidently been buried with their former owner. Not finding any other specimens in our extensive explorations, extending over a period of three week's search for relics, I was convinced that they were not objects of general use, but were part of the paraphernalia of a medicine man, among the natives, and that their manufacture required the exercise of an unusual skill, and would only be made by certain individuals of the tribe possessing the necessary qualification.

Some ten years after this discovery I had an opportunity to interview some of the few representatives of the former aborigines, and from them learned their uses. They said they were used by the medicine men in the cure of disease, by scarifying the skin over the affected part, and applying one end of a bone or stone tube (See Fig. 370) over the scarified parts and exhausting the air from the tube by suction applied by the lips of the operator, thus causing blood to be drawn from the wounds made by these splinters.

Dr. Abbott's theory of the origin and uses of these objects will not apply in southern California, he says, (loc. cit.), “similar splinters of chert and jasper are quite common everywhere, and it is probable that they are only a natural product of the chipping of masses of these minerals when fashioning various implements” and that, “they might readily be utilized as awls, or for perforating substances soft as limestone.”

The large number, (some hundreds,) found in the graves on Santa Rosa Island, and those since found in other localities, are made of the same material, are of the same general form, and were made in the same manner; that is, by taking a flake having the required sharp edge and curve, and chipping off the thick portion of the flake until of required size, thus forming a five-pointed, sharp-edged implement suitable for the use designated.

They all have one knife edge, and are triangular in section (as may be

seen by illustrations in Fig. 379). The difficulty of manufacturing them may be imagined when it is considered that, each one is the thin knife-edged portion of a large flake, and the most difficult part is to break off all the superfluous thick part of the flake, leaving only the narrow, three-cornered, sharp pointed implement represented.

Hugo Reid says of the Indians of Los Angeles county, that local inflammation was treated by scarifying with pieces of sharp flint and procuring as much blood as possible from the part. (See *Overland Monthly* for August 1896).

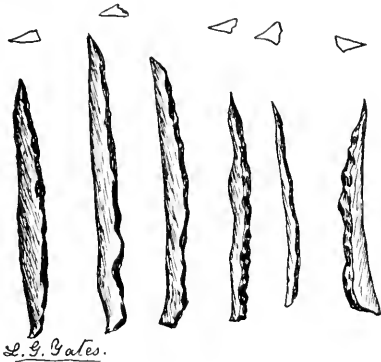


Fig. 379. S. 1-2. Scarificators used in connection with bone and stone tubes for the treatment of diseases. Santa Rosa and San Nicolas Islands.

The Report of U. S. Nat. Museum for 1892 contains a paper by Thomas Wilson, on "Minute Stone Implements from India" in which he describes and illustrates a series of implements which seem to be identical in form with the specimens found in southern California.

He says of them: "There is a marked difference between the two edges of the crescent. The crescent edge is thick and has been worked into its present shape by the secondary chipping of the most minute kind, while the straight edge is the cutting edge, sharp and thin, just as it comes from the nucleus, and is without any secondary chipping."

TUBES.

Tubes of bone, stone, and wood were doubtless used for various purposes, the most important of which was, in connection with scarificators, in the treatment of diseases, also as receptacles for various herbs and other charms. The medicine tubes were filled with tobacco, humming-bird feathers, meal, etc., and deposited in certain places as offerings to the particular deities they wished to conciliate.

A tube about five inches long, filled with feathers and tobacco and ornamented with beads and feathers of the blue-bird, and of some from a bird of yellow plumage, formed the great offering to one of their deities.

Some were used as receptacles for bone needles, and others as drinking tubes.

Among some of the tribes, young warriors while on their expeditions preparatory to being admitted to the councils of the tribe, were not allowed to let water come in contact with their lips, nor to scratch themselves with

their nails, and in order to comply with these requirements they carried with them on these expeditions, a tube of reed or bone, and a piece of wood or bone to be used as a scratcher. Some of the large number of bone implements found in the graves may have been used for this purpose.

POTTERY.

The question has often been asked: Did the aborigines of California make or use pottery?

So far as known no prehistoric pottery has been found, but after the founding of the Missions, the Fathers instructed the Indians in its manufacture.

The late Henry Chapman Ford, while excavating in a burial place some twelve miles east from Santa Barbara found a few pieces which appeared to be of Indian make, although it is possible that it might have been brought from New Mexico or Arizona.

Mr. Paul Schumacher in 12th Annual Report of the Peabody Museum, p. 521, says of the *Techahet* Indians of Los Angeles county. "Among the Kahweyahs (Cahuillos), who unlike the former Indians of the coast of California, make household utensils of burned clay instead of soapstone."

BASKETRY AND BASKET-MORTARS.

The manufacture and use of baskets was not so general among our coast Indians as it was with those in the interior, and owing to their destructibility such as were used have not been preserved, although an occasional fragment is found, having been preserved by a coating of pitch, or of asphaltum. Some entire baskets have been found in caves in the mountains. These baskets seem to have been used as receptacles, for sacred or ceremonial objects and were evidently very old, but whether of prehistoric, or more recent time, it is impossible to determine.

In exploring some of the caves on the islands, and at village sites on the mainland, we occasionally find an irregularly shaped stone with a flat surface upon which asphaltum has been melted in the form of a circle about a foot in diameter, showing evidence of basket-work having been imbedded in the asphaltum while it was soft. These are the bottoms of basket mortars, made by attaching a bottomless basket to the rock by means of asphaltum, thus making a light weight and efficient mortar, and a labor-saving device.

FLAKED STONE IMPLEMENTS.

In southern California, nearly all the various known forms of flaked implements have been found, besides other forms upon which the artificer exercised his artistic fancy.

A few are shown in Figs. 356-8, 361, and 380. Others will appear in the Northern California section of this book.

Obsidian, translucent chalcedony, agate, etc. points are so thin and well made that, except for the slight undulatory surfaces, they might have been cut and polished by a lapidary.

Very large implements or ceremonials are found. Occasionally we observe an implement of rich, brown, obsidian streaked with black. This material is rare.

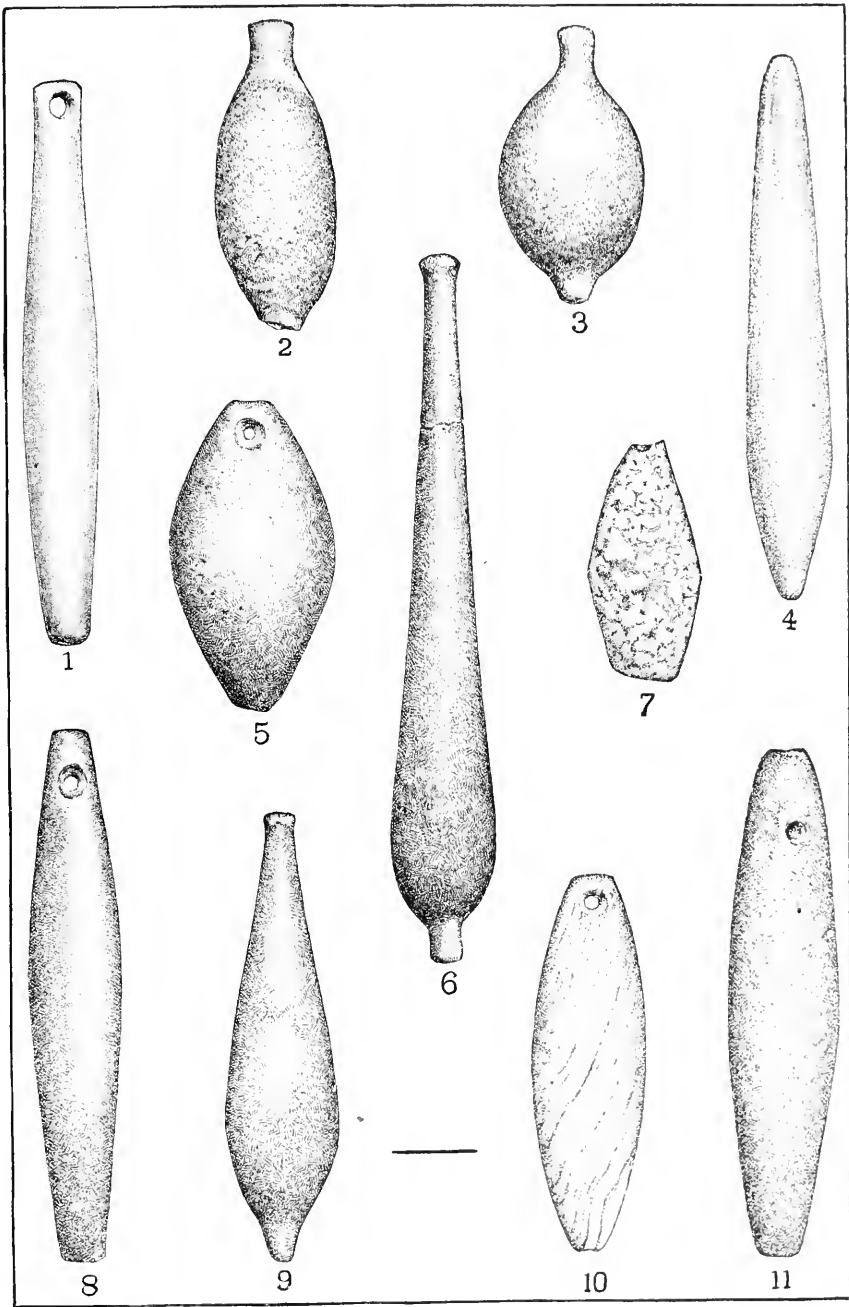


Fig. 380. Charm Stones. S. little less than 1-2.

CHARM STONES.

Many theories are advanced as to the use of these charms or plummet-shaped affairs. I shall not repeat them here.

Fig. 380. 1. Represents the oldest known specimen from California, found in an old river channel under Table Mountain, Tuolumne Co., California; made of yellowish, translucent arragonite, symmetrically made and finely polished; several unique and interesting relics were found with this and they formed the subject of discussion before the Am. Assoc. for the Advancement of Science at its meeting in Chicago; original in Yale College; cast in writer's collection.

2. Of close grained sandstone, unfinished, Contra Costa County, Cal.
3. Of trap, well finished, Alameda County, Cal.
4. Fine grained, argillaceous brown sandstone, unfinished; Alameda or Contra Costa County, Cal. This specimen has a number of notches near the upper extremity, extending around the implement, but mis-matched; evidently intended for suspension.
5. Of serpentine, perforated, smoothly finished, Alameda or Contra Costa Counties.
6. Unique specimen of trap rock, finely made, Alameda Co., California.
7. Hard, pure white magnesian rock, containing crystals of a dark mineral (serpentine?), Alameda County. This specimen is beautifully polished, but broken at both ends; the break at the upper end passed through the perforation.
8. Dark, slaty rock, finely finished, perforated, showing free gold in considerable quantity near the upper end; Napa County, California.
9. Dark metamorphic rock (sandstone), finely finished with a neck at the upper end, Napa County California.
10. Perforated, oval in section, made of arragonite, the softer layers of the rock being weathered out by long exposure, or dissolved out by water, leaving the harder portions in projecting lines, which are much more apparent in the original than shown in the illustration.
11. Of very hard slate or trap, perforated, with a depression running from the perforation on one side, over the top to the other side of the perforation; this peculiarity is not shown in the illustration; Napa or Contra Costa County, Cal.

See "Charm Stones, the so-called Plummets or Sinkers of California." Lorenzo G. Yates, Santa Barbara, Cal. 1890.

ARROW STRAIGHTENERS OR SMOOTHERS.

Among the many implements of serpentine and steatite, the arrow straighteners or smoothers were, in their form and finish, among the most artistic. In shape, they vary from a spheroid to a parallelogram, and from the irregular form of the original pebble or stone from which they were made, to a flat disk. Some are elaborately ornamented with incised lines and figures in relief.

The main feature is the groove by which, with the aid of heat, the arrow shafts were straightened and smoothed. These implements have been extensively figured and described in various archaeological publications, and for this reason, together with lack of space, I have not represented them by illustration. (See Wheeler's Report, Vol. VII.)

RUBBING STONES.

Another class of implements which seems to be peculiar to southern California, and the uses of which have not been definitely decided, have been called rubbing stones. They are usually, of coarse sandstone, or grit, in the form of a flat oval, varying from one and one-half to two inches thick, about five inches long, by three and one-half wide, either plano-convex,

concavo-convex, or double convex, and fit into the hand in a manner to suggest their uses. Probably one of their uses was to work down and smooth the outer and inner surfaces of the stone pots and cooking utensils, for which purpose they seem to be well adapted.

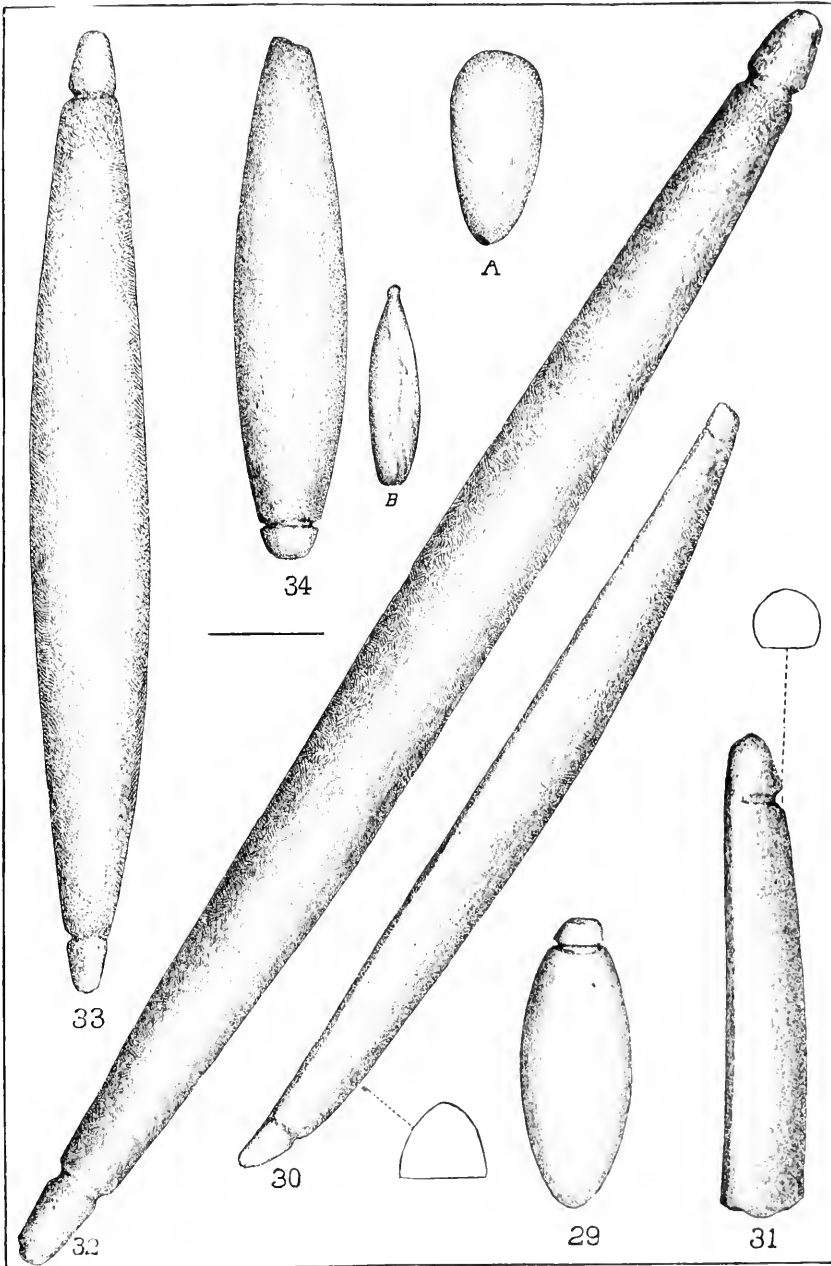


Fig. 381. Charm Stones. S. Little less than 1-2.

Fig. 381. 29. Of Hematite, finely polished, found in Santa Barbara County, California.

by Mrs. Packard; this specimen is of the same shape and material as those of the eastern United States and other countries.

30 and 31. Of similar material to 1, and found in the same locality. 30, entire, flattened on one side, with notches at both ends. 31, a broken portion of a similar implement, the cross sections showing a slight difference in their forms.

32 and 33. Of hard shale, originally ornamented with feathers, used for purposes similar to those of the charm stones. From the islands near Santa Barbara, California.

34. Hematite, polished, from Tennessee.

A. Copied from Ewbank's *Life in Brazil*, page 451.

B. From page 464 of the same work.

1 to 30 inclusive, with the exception of 29, are from specimens in the writer's collection, and represent a portion only of the articles of this character contained therein.

32 and 33 are from specimens in the collection of Mr. H. C. Ford.

Where not otherwise stated the material of which the charm stones are composed is either a hard fine-grained argillaceous sandstone, or a trap rock.

The figures are all reduced to a little less than one-half size.

[It is but just to state that I was compelled to omit portions of Dr. Yates' text and figures. I would that each editor could have been given more space. W. K. M.]

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SECTION VIII.

BRITISH COLUMBIA AND THE NORTH-WEST COAST.

This is a region inhabited by many fishing tribes. While prehistoric specimens are found in some numbers, yet the territory can scarcely be said to rank in archaeological importance with sections of the United States.

Professor F. W. Putnam, of the American Museum of Natural History, and Peabody Museum, has sent several surveys to the North-west and also to Behring Straits, to Russia and China. He has done this with a view to determine, if possible, the origin of the American tribes. Professors Smith and Fowke, and Dr. Boas have been instrumental in collecting specimens, folk-lore and linguistic materials while in charge of these various expeditions. It is premature to give the results of this important undertaking. I have received from Professor H. I. Smith some reports bearing upon the explorations, and I depend largely upon his *Archaeology of Lytton*, British Columbia, and other publications for the facts set forth in this section.



Fig. 382. S. 1-1. Stone object made of foliaceous-steatite. Found on a village site on the Fraser river. Mr. Smith does not name the artifact.



383. S. 1-2. Two specimens found in excavating a grave near Lytton. The one to the left is of impure chalcedony and the other of argillite



Fig. 384. S. 1-1.

384. Fantastic forms chipped from glassy basalt. The first one was daubed with red ochre and came from a grave. The others were found on the surface.

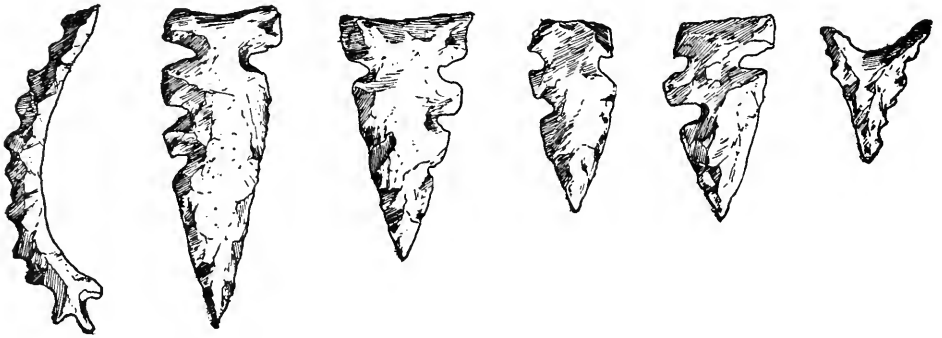


Fig. 385. S. 4-5.

Fig. 385. These fantastic forms are of glassy basalt. Collection of the Provincial Museum, Victoria, B. C.

I am indebted to the American Museum of Natural History, N. Y. for the loan of all cuts used in this section.

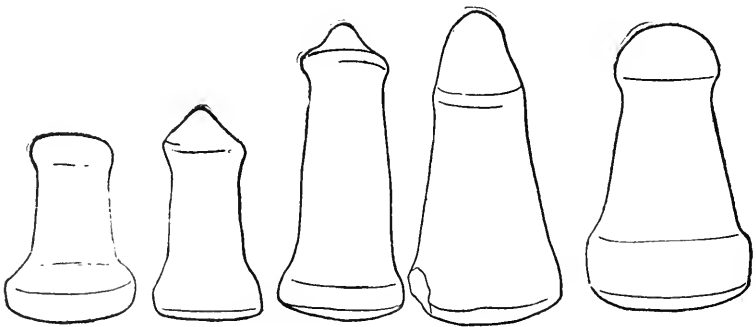


Fig. 386. S. 1-2.

Fig. 386. Outlines of pestles. These 6 from the Fraser river sites. Alaskan pestles are similar, but rarer.

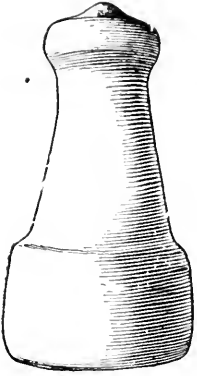


Fig. 387. S. 1-4. The top of the handle, hat-shaped. I have seen pestles like these in Ohio and Illinois. Mr. Smith found several in graves. I have never known, with two exceptions, of them being found in graves or mounds in the Mississippi Valley.

Readers will observe that the stone implements, etc., of the Northwest coast are inferior to California forms and totally different from those of the East and South. It is an interesting part of archaeology, this comparison of types. Look at the flint and stone objects illustrated on Tenn., Ohio, Mich. and Ind. pages, and then draw conclusions regarding the skill of the ancient workmen in the far northwest.



Fig. 388. S. ¼. Skin scraper in wooden handle. Shuswap Indians. Kamloops, B. C. "Many scrapers of this sort, and some natural fragments of convenient form from neighboring outcrops, have been seen in use among the women of this region for softening skins.* They were inserted in the split end of a wooden handle about three feet in length, and held there by winding with a thong that portion of the wood that held the stone. After the skin has been fleshed and freed from hair, it is stretched upon a framework of poles and prevented from becoming hard and stiff by being scraped and poked with such a scraper until it is thoroughly dry. The specimen shown in this figure is much worn by such use."

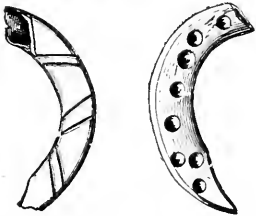


Fig. 390. S. 1-1. Dice made of woodchuck teeth. Mr. Smith says:† Dice were often found with other objects at the sides of the skeletons. Although beaver teeth, some of which were covered with red ochre, were found in the same places, and dice made of beaver teeth were secured from prehistoric graves at Kamloops, B. C., yet all of the dice found here were made from the teeth of the woodchuck. These are so much like the dice made of beaver teeth which the modern Indians of British

Columbia use, that our knowledge of that game enables us to explain these specimens. The counting varies slightly at different places, but the game is practically the same. Dr. Franz Boas ‡describes this game, as played by the Lkungen of south-eastern Vancouver Island."

*Jessup, North Pacific Expedition. Archaeology of Lytton, B. C. Harlan I. Smith, May, '99, pg. 147.

†Ibid, pg. 153.

‡Sixth Report on "The Northwestern Tribes of Canada" to the British Association for the Advancement of Science.

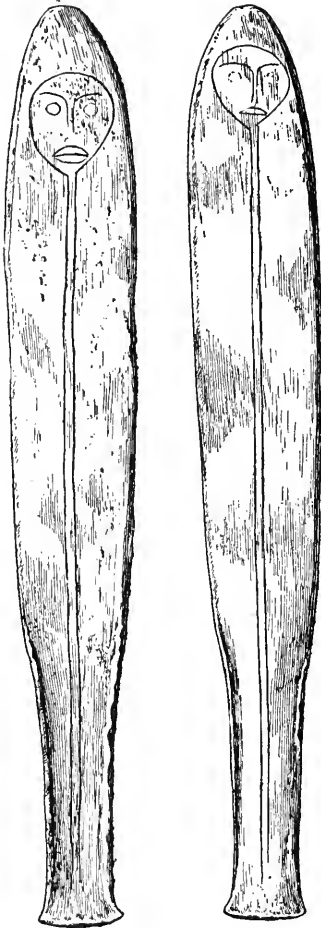
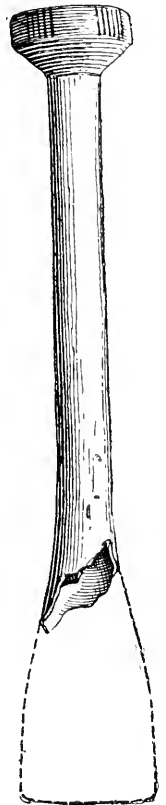


Fig. 389. S. 1-8. "A copper war-club was obtained by Mr. James Yeit from Indians who dug it out of a prehistoric grave at Spuzzum, B. C.* This place is at the mouth of the canon of the Fraser, forty-two miles south from Lytton. The practical difficulties of the journey were great before contact with the whites; but the geographical nearness, and the fact that the present Indians of Spuzzum are of the same tribe as those of Lytton, induce me to describe this specimen with those from Lytton. Its edge is bevelled, and in some places is knife-like. The grip and base are flanged by lateral pounding, and a design is engraved on each side, as is shown in this figure.



Fig. 391. S. 3-4. This specimen was found in a grave at the main site† It is nicely cut from greenish steatite and is well polished. The mouthpiece is marked with parallel lines such as would be made with a notched stone or bone. The hole is slightly funnel-shaped for about a quarter of an inch from the mouth, but is straight the rest of the way, showing a high degree of skill in drilling."

Fig. 392. S. "Its design probably represents the beings that appeared to the owner in a dream.‡ It was customary for men to carve on their pipes, and chiefly on sacred pipes, representations of the beings appearing in their dreams, especially in their first important dream in which they received their manitou. Owing to the secrecy of treatment of sacred objects, it is difficult to obtain specific interpretations of such designs, for these secrets would be kept by the individual even from his friends, and with his death the knowledge of the significance of the design would pass away."



*Smith, Arch. Lytton B. C.

†Ibid.

‡Ibid.

The two pipes shown in Figs. 391-2 are of the tubular variety mentioned by writers as confined to the Pacific Coast. Some of the modern Southwest pipes are of similar shapes.

Prof. Smith has a paper in the *American Anthropologist* for '99, (p. 363), in which he classifies hammers, pestles, etc., of the Northwest coast. Besides types like Figs. 386-7, he finds flatiron shaped and other elaborately designed and carved specimens. He considers the artistic forms prehistoric.

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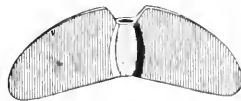
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Thacker, W. H. Several papers in the *Am. Archæologist*.

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Readers caring to pursue the subject further will find the above articles interesting.



SECTION IX.

ARCHÆOLOGY OF CALIFORNIA.

CENTRAL AND NORTHERN CALIFORNIA.

THE REV. H. C. MEREDITH, Stockton, Cal.

The area this Section will attempt to cover is all that part of California north of an east and west line drawn through Bakersfield in Kern County. It so happens that this large territory, embracing three-fourths of the state, has been neglected for the most part in the literature of archæology. Even the Government Reports devote themselves mainly to the Channel Islands and certain of the southern counties. I could, therefore, obtain but little help from that or any other source ; and this section pretends to nothing more than attempt to pioneer a large and difficult field on a "rush order."*

Ethnologically, California falls into three divisions. The true Californian occupied that part of the state north of Tulare County, south of Shasta and Humboldt Counties, and west of the crest of the Sierras. The aborigines of Southern California were modified by contact with the more vigorous tribes of Nevada and Arizona, while the incursion of powerful and war-like tribes from Oregon, drove the Californians south, or enslaving them, supplanted the culture of the weaker people with their own.

Archæologically, therefore, Southern California is somewhat related to Arizona, and Northern California to Oregon. The Central Californian must be regarded as typical of the state, and he has developed some forms not known elsewhere. On the other hand, he was without the axe and the hatchet, without pottery, and without effigy forms, the figure of man and beast seem never to have been employed in the ornamentation of his artifacts, except in the matter of textiles. Some of his handiwork, however, reached a perfection probably not attained elsewhere.

In treating the subject assigned me, I shall group my statements under such heads as offer most convenience in the brief survey of this character.

EARTH WORKS.

Along the rivers and sloughs of the great central valleys, about the margins of Tulare and Kern Lakes, and in the marshes about San Francisco Bay, immense and innumerable mounds were raised. These have never been thoroughly explored by a properly equipped scientist ; yet I feel safe in saying they are in nowise related to the mounds of the Ohio and Mississippi Valleys. In the opinion of the writer they had no purpose other than to

*Mr. Meredith had 2 months in which to prepare his MS.—W. K. M.

raise the village above the sudden and frequent overflows to which the localities were subject. Powers thinks they were reared for hygienic purposes. On page 316 of his "Tribes of California," he says: "It is asserted by the earliest pioneers, among them Claude Cheney, who settled on Bear River in 1846, that the Indians were much subject to fever and ague and other diseases resulting from malarial influences. To avoid them, they not only built the mounds for their houses, but the lowland tribes went up into the mountains to spend a portion of the hotter months."

In size the mounds vary from one, 30 feet in diameter and 4 feet high, to one 16 feet high, having an area of 4 acres. They contain no altar, and have been used both as village sites and burial places. No part of the mound, seemingly, was especially dedicated to burial purposes, but all portions alike were available for such uses. Those examined by me in the San Joaquin and Sacramento Valleys showed burials at 2 levels; the first, at a depth of one to 4 feet; the second, at 3 to 8 feet. There seemed to be many instances of intrusive burial of remnants of bodies and skeletons. In a mound near Bethany, this county, upon which I did some work in '98, an excavation, 4x4x4 feet, revealed what appeared to be parts of no less than 17 skeletons. I was unable to determine whether this find represented the remnants of bodies which had escaped the fires of cremation, afterwards gathered together and buried, which was a custom here; or whether they were skeletons disinterred in making new graves and reburied, which was and is a custom also. A few inches under this mass of bones was found an entire skeleton lying upon the back with many relics.

A curious instance was noticed in this mound. In a soil entirely void of stones or gravel, was found at the head of about one-half of the skeletons, a series of polished pebbles, three to eight in number. They appeared to have been placed in or upon the mouth of the dead.

All of these mounds show burials with the heads to every point of the compass; some skeletons lay upon the back; others with knees drawn up against the chest upon the right side. In a mound on Robert's Island near this city, 12 skeletons were unearthed on January 4th, '98. Three of these lay supine, 9 doubled up and on the side. The latter were without a relic of any kind. Each of the former had a number of objects in shell, bone, etc.

In a large mound, north of Sacramento City, I found the skeletons lying upon the back, and cased over with the wood and bark of the redwood. Immense quantities of wampum, and an unusual number of large stone beads were found in this mound. The wampum was burned to lime so that it crumbled at the touch.

CHIPPED IMPLEMENTS.

Perhaps no class of objects appeals so strongly to the collector as do these, the most numerous and the most widely disseminated relic of the stone

age. I think the Californian must excel in these implements. I have studied with much interest the published cuts of the "Solutreen" flints, and I fail to see why they should be thought to be of workmanship superior to that of western North America. True, the flakes are thin and long, like



Fig. 393. California Obsidians. Collection of Mr. J. A. Harris, Stryker, Ohio.

Fig. 393 shows a fine series of forms that, in the larger sizes, are quite rare. These specimens are the property of Mr. Harris. They were found on John Bayso's Ranch, three miles from Fresno Flats, Madera County, Cal., March, 1899. Were dug out while digging a post hole; there were 20 of them.

No. 1 is 10 inches in length, 3 inches wide, weight 19 ounces, thickness $\frac{3}{4}$ inch, a small piece broken from point.

No. 2 is of different material from the others, is of two colors, a gray and black not unlike ribbon or banded slate, and is of a coarse quality of obsidian.

No. 3 is 6 inches long and is the most perfect one of the lot, is much finer chipping than any of the others, is $\frac{1}{4}$ inch thick.

Nos. 6, 7, 8 and 9 belong to James Howard's collection.

The weight of the 16 is 12 pounds.

In the writer's collection are 3 of these forms. Two just a fraction less than 12 inches, and one about $8\frac{1}{2}$ inches. Beside these I know of no other as large as 8 inches in length.

These were probably used as celts. The workmanship is rude and the objects are all blunted at the ends as by service of some kind. In the same class with these, in my opinion, is a thick and strong implement chipped from obsidian of broad celts-shape. It is $6\frac{1}{4}$ inches long and 4 wide. It is $1\frac{1}{4}$ inches thick and chipped to a sharp cutting edge. It was found in Madera Co., and is in the writer's collection.

"shavings," as Dr. Wilson observes, but in delicacy, in beauty of design and completeness of finish, the best work of this state seems quite equal to them.

Differing from these rude strong objects are the delicate and elegantly finished "swords," ceremonials, they are now considered, though Mr. Stephen Powers expresses the opinion that originally they were weapons, but fell into disuse as such with the advent of the metal knife. These objects are quite numerous in Southern Oregon and Northern California. They are found in graves and on the old village sites, and many are yet in the possession of the Indians who jealously preserve them as memorials of other and better days. Speaking of certain knives 3 feet long and made of steel by the Yuroks (Northern Calif.), Mr. Stephen Powers says: "Of course they are not aboriginal, but rather a substitute for the large jasper and obsidian knives which they used to make and use, but now-a-days are kept only as ornaments or objects of wealth, to be produced on occasion of a dance. They may, perhaps, be called prehistoric, as they seem to have fallen into disuse as weapons, before the arrival of the Americans." They are made of jasper and obsidian, in different shades, and are among the finest examples of chipped stone in existence. That they are ancient, is I think, attested by their great superiority of workmanship over the modern blades found in the same locality and still attached to the handles, etc. The type appears all along the West coast and far into the plains of Mexico, but they are less numerous in Southern and Central California than in the North.

In my collection is one found in a mound near here. A beautiful specimen 12 inches long, less than an inch wide, quite thin, not pointed, but finished at the ends like an ordinary case knife.

Mr. C. P. Wilcomb, of San Francisco, tells me he knows of a magnificent blade 24 inches long. I have before me an outline of a specimen 20 inches long and 4 inches wide. This specimen, it will be observed, has the same length and width as the fine Illinois "Ceremonial" figured in the pages of this book, (Fig. 203), but the California specimen is but little more than half as thick, and the edges, instead of being ragged, are perfectly straight, having scarcely a nick in them. It was found in Siskiyou County, is of shining black obsidian and faultless workmanship.

Splendid obsidian knives are sufficiently numerous to encourage all wide awake collectors to possess examples. They are of the same general shape as the knives of Missouri and Illinois, only thicker in the longitudinal center. The Wilcomb collection has some fine examples. Four in the writer's collection will measure 7 inches with perhaps forty 6 inches and less. The Barr collection has a fine specimen in petrified wood. Perhaps in this class belong also the curved obsidians found here and known as the "Stockton Curves." They are found only in two mounds located on Stockton Channel and Walker Slough.

For a brief history of these remarkable objects and their discovery, the

reader is referred to my article in the "*American Archæologist*," Vol. II, p. 319. In that paper I expressed the opinion that the curves were used to scarify the flesh on ceremonial occasions. Aside from the shape and general adaptability of the implements to such service there is little evidence to support the theory. Nevertheless, as yet I have no reason to revise my views. Scientific men, on examining the curves, usually say: "They must have been used in cutting flesh." A California editor, in a foot-note appended to an article of mine on "*Art Forms in Obsidian*," remarks "that, as a matter of fact, the 'curves' are 'merely artifacts' made of that shape, because



Fig. 394. S. I-I.

"Stockton Curve." Black, opaque, obsidian. Strong serrations on outer edges. Notched for handle; outer edges form a rectangle and the inner the segment of a circle. Found with a skeleton in Walker Slough Mound. Barr collection.

"Stockton Curve." Glossy, black obsidian. Compound curve to right and left. Notched for handle; serrated on convex edge. Found in Stockton Channel Mound. Meredith collection.

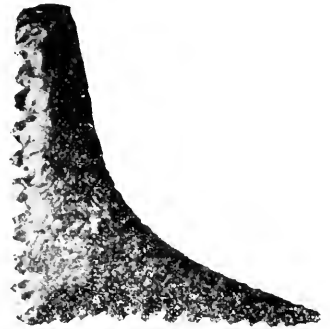


Fig. 395. S. I-I.



Fig. 396. S. I-I.

"Stockton Curve." Black obsidian, flat. Notched for handle; serrated on all edges. Found with skeleton in Walker Slough Mound. Barr collection.

that shape is the natural cleavage of the nodular obsidian accessible to those Indians. As they couldn't depend upon its breaking straight, they worked it as it did break and made their knives thus sickle-shaped." I am sorry to differ from so skilled an archæologist and so estimable a gentleman as Mr. Lummis, but familiarity with local conditions makes his theory impossible. I have examined superficially or otherwise nearly two hundred mounds and

village sites in this vicinity, and although these villagers all drew their obsidian from the same sources, not one of these sites, except the two mentioned, had anything that suggests the "curve." All their chipped implements were perfectly straight. Moreover, the great obsidian beds of Lake and Napa counties, which I have examined several times, could furnish all the Indians of the United States with material for generations. The hills are full of great blocks of obsidian, too heavy for a man to handle, and it breaks as straight as a shingle.

SPEAR-HEADS.

Spear-heads are numerous and as long as 10 inches, possibly longer. Nearly all spears are of fine workmanship. The material for the most part is obsidian, but chalcedony, jasper, (green, red, brown, white, etc.,) agate and petrified wood are occasionally employed. In the Barr collection is a 6-inch spear of milk-white, translucent chalcedony with delicate serrations, graceful outlines and perfect workmanship. It is one of the most beautiful I have seen. It is from the Walker Slough. Serrations on spears are the exception and not the rule, considering the territory as a whole. In the vicinity of Stockton, however, serrations are the rule and not the exception.

Fig. 60, Nos. 5 and 7, in Section II, show quite well some California types.

ARROW-POINTS.

In the large valleys of the Sacramento and the San Joaquin surface



Fig. 397, a. S. 1-1.

"Stockton Curve." Black, opaque obsidian, double serrations; notched for handle. Most delicate and elegant workmanship. Found by owner at the Stockton Channel Mound. Meredith collection.

All of these curves are shown in the natural sizes. The cuts appear by courtesy of the "Land of Sunshine."

"Stockton Curve." Same as Fig. 4. Presented by Jas. A. Barr to the National Museum.

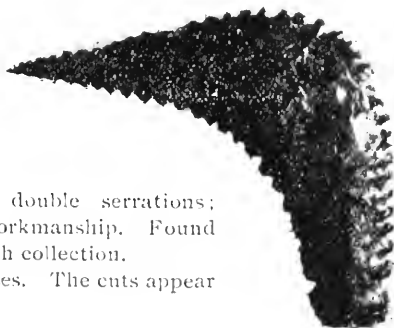


Fig. 397, b.



Fig. 398. S. 1-2.

"Twin Stockton Curve." One of three specimens of this shape. It was found by Mr. Barr, at the Walker Slough Mound. It is simply a double or twin curve. The Barr collection has several small specimens of this type, but the "swallow-tail" is not so well developed. This specimen is of obsidian. It is another illustration of the remarkable skill of the California Aborigine in working out his fancy in chipped stone. Barr collection.

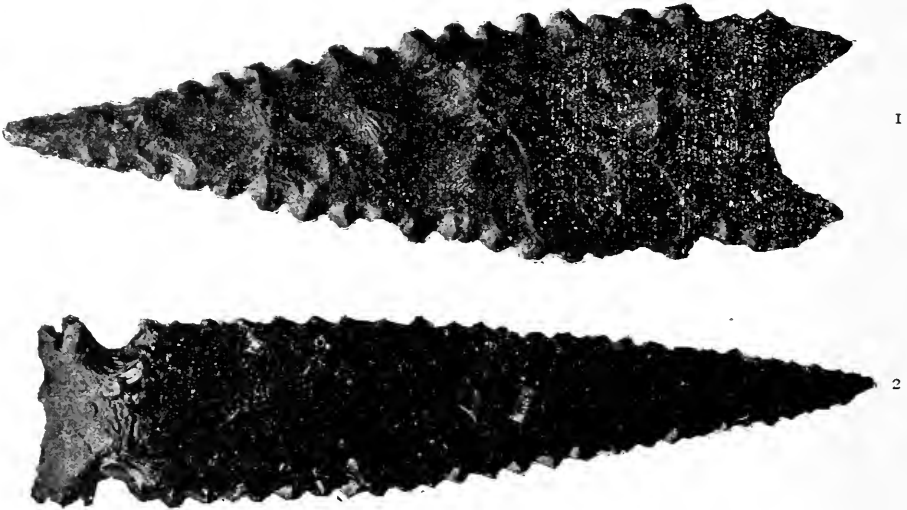


Fig. 399. S. 2-3.

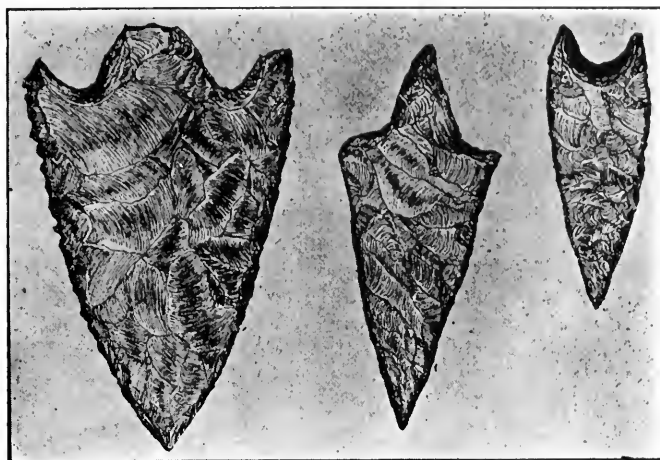
Serrated Spear-heads. No. 1 is of shining black obsidian. No. 2 is of gray obsidian. These remarkably fine specimens were found with six others in a mound in San Joaquin County. Meredith collection. By courtesy of "The Land of Sunshine."



Fig. 402. S. 1-1.

length most unusual. It was found in Stockton Channel Mound, and is in the Barr collection.

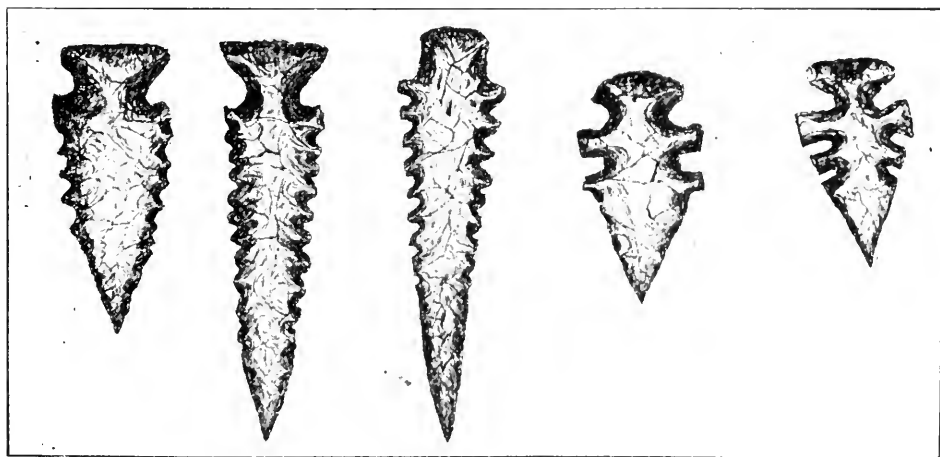
A unique arrow. This remarkable specimen is of a fine bluish-green jasper. The workmanship is superior. The



1 2 3

Fig. 400. S. 1-2.

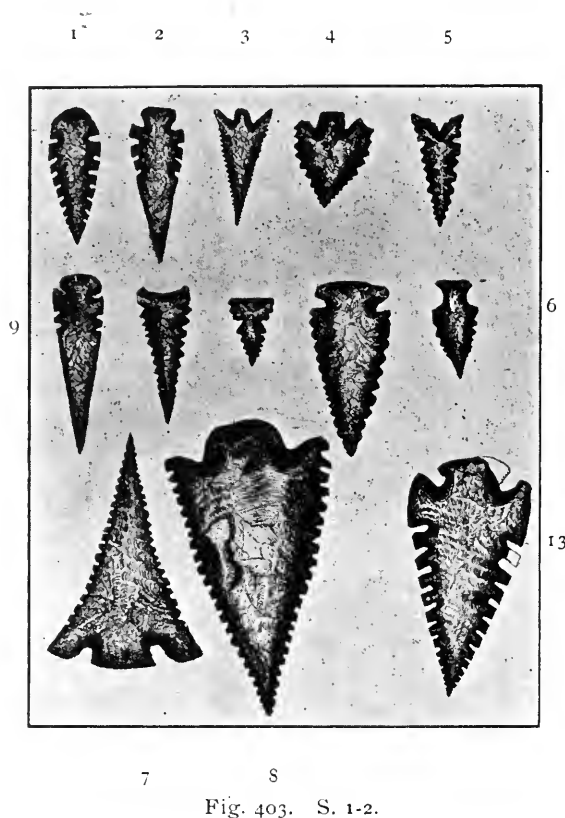
Spear-heads. No. 2, black obsidian, Tulare County. No. 3, brown jasper, Tulare County. These specimens are well made and the forms appear throughout all of Central and Northern California. No. 1 is unusually broad for the West Coast, black obsidian, found in Sonoma Co. Wilcomb collection.



1 2 3 4 5

Fig. 401. S 1-1.

Serrated arrows. Black obsidian. Nos. 1 and 2, Sonoma County. Thick, but finely made. No. 3, Salano County. Thinner than the others. Nos. 4 and 5, Sacramento County. Thin, well made, and remarkable specimens. Meredith collection.



Serrated arrows. Though so poorly shown, this is one of the finest groups of arrows ever published. They are all of black obsidian, except Nos. 3 and 4, which are gray obsidian. Nos. 1 and 2 are from Sacramento County, Nos. 3 and 4 from Shasta County, No. 5 from the Bayso Meadows in Madera County. All others are from Stockton, except No. 7, which is from Modoc County. Nos. 11, 12 and 13 are in the Barr collection. All others are in the Meredith collection.

Serrated arrows. Three fine specimens in black obsidian from Stockton Channel Mound. Barr collection.

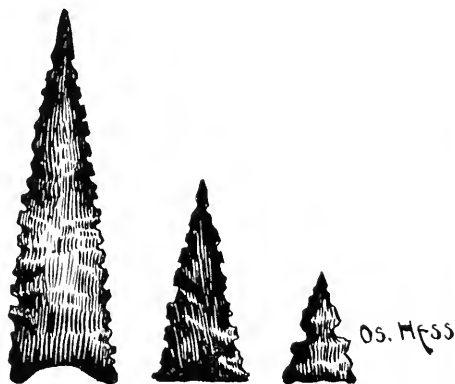


Fig. 404. S. 1-1.

finds of arrows (or any other relics) are very rare. But in the foot-hills and mountain regions, such finds are numerous. Every village was apparently a workshop. Thousands of chips litter the earth, in striking contrast with the large valley sites. Every token indicates a liberal use of the arrows. The long thick spike arrows of Sonoma and Solano Counties and the broad arrow, deeply serrated, of San Joaquin, Sacramento and Yolo Counties are peculiar to their respective localities. They are Central California types pure and simple and among the most beautiful in the world. Figure 402 is a unique development of a type found throughout California and Oregon.

The arrows of the large valleys have a higher degree of perfection than those of any other section of the state. I'm sure they were ceremonial for the most part, seeing service only in rare emergencies. The form of serration is unique and I consider the purpose of it to be ornamentation. That arrows were not in general use in these valleys is shown by the total absence of surface finds, and by the dearth of chips on the village sites. Chips are almost as rare as arrows.

I think most of the arrows were obtained from mountain tribes and reworked into the unique forms found here. Most of the arrows of Central and Northern California are of obsidian, but jasper, agate, chalcedony, fossil wood, etc., are occasionally employed.

The odd and crude form of arrow still spoken of as "peculiar to the province of Chirique," though reported from half a dozen of our states, is found here. I have 3 specimens found in Lake and Napa Counties, in every way typical of the Chirique flints.

DRILLS.

Drills or perforators are not numerous. Indeed, they seem entirely wanting in the San Joaquin and Sacramento Valleys. In the mountain and

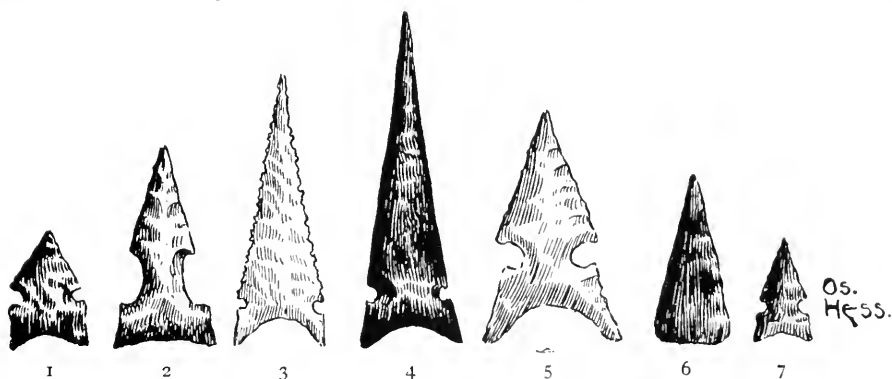
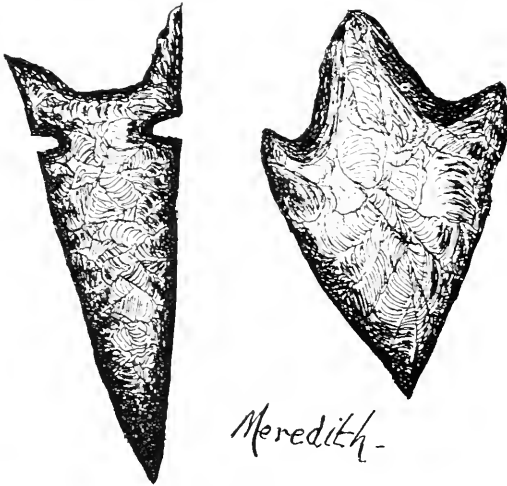


Fig. 405. S. 1-1. Arrows.

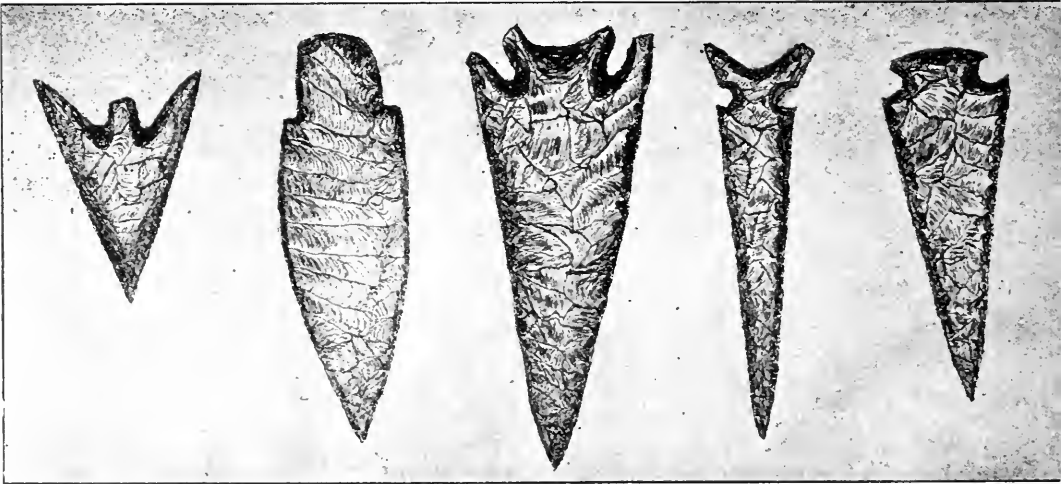
These are all from Stockton and vicinity. Nos. 1, 4, 6 and 7 are of black obsidian. The workmanship of No. 4 was probably never equaled in the Old World. So smooth is the specimen that the place from which the chips were thrown can hardly be discerned. Nos. 2, 3 and 5 are jasper; brown, cream-colored and bluish-green respectively. Barr collection.

foot-hill regions, however, they appear sparingly in the forms and sizes familiar to all Eastern collectors. A recent addition to the writer's collection is a combined knife and perforator. The implement is 4 inches long. Three-fourths of an inch is worked out in the form of a drill, projecting from the leaf-shaped implement like a stem. A unique drill-shaped implement in the collection of Prof. Barr is shown here. (Fig. 408).



Very fine specimens in obsidian (left hand) and jasper. Shasta County, Cal. Wilcomb collection.

Fig. 406. S. 1-1.



1 2 3 4 5
Fig. 407. S. 1 r. Arrow-Heads.

All of these specimens are of obsidian. No. 1 is a type frequently seen in Northern California and Oregon. This fine specimen is from Bull Creek in Humboldt County. No. 2 is very thin and smooth. The flakes thrown off extended nearly across the specimen. It is from Lassen County. Just that form and that kind of clipping I have not met elsewhere in California. No. 3 is a Siskiyou County specimen. Nos. 4 and 5 are from Sacramento County. Meredith collection.

ARROW-SHAFT SCRAPERS, ETC.

These occur sparingly, but are occasionally found in Central California. Turtle-backs are met with rarely, but more frequently about Clear Lake than elsewhere. The ordinary flint scraper is exceedingly rare.

BONE IMPLEMENTS.

Bone implements are more numerous, perhaps, on the Pacific Coast than anywhere else in the United States, and are abundant in every part of this state. Those of Central and Northern California have a much better appearance than those from the Islands and Southern counties. The bleached and weathered appearance of the latter is replaced in the former by a smooth, finished surface, yellowed with age. Occasionally a remarkably high polish remains. The most common form is the "awl," or perforator. These abound in all the mounds and village sites, varying in size from 2 to 7 inches. They were used in the construction of baskets, perforating any kind of skin or fabric which a woman would work, and during the régime of the Spanish missions in sewing up tallow in the hides of the slaughtered animals.

WHISTLES.

The second most numerous form is probably the whistle. These are

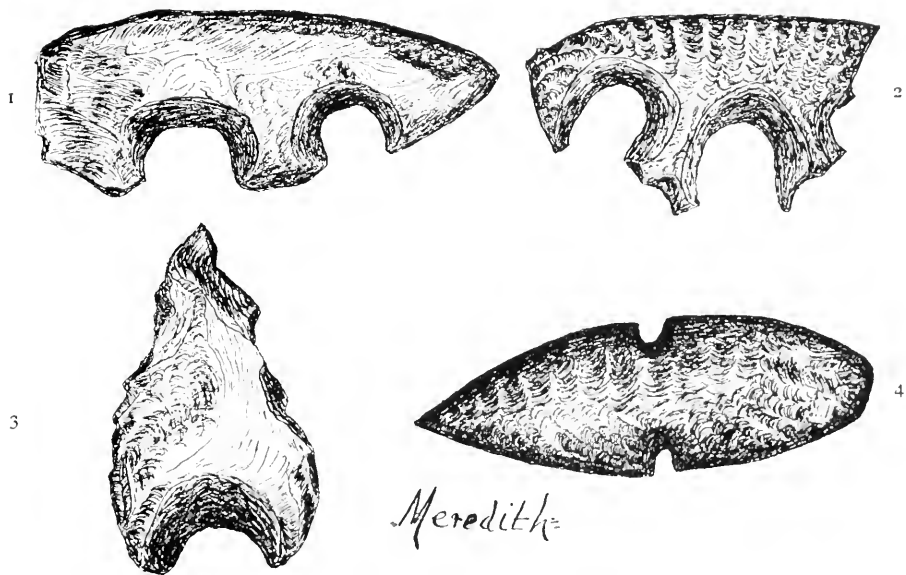


Fig. 409. S. 1-1.

Fig. 409, S. 1-1, shows three scrapers and an arrow. Nos. 1 and 2 are scrapers, supposed to have been used in dressing arrow shafts, etc. No. 1 is a fine gray argillite, Stockton. No. 2 is brown jasper, Merced. Barr collection. No. 3 is in the same class, but different form; black obsidian, Calaveras County. Meredith collection. No. 4 is an arrow of black obsidian. The fine chipping, the shapely form, the central notching, combine to make a most interesting specimen, Shasta County. Wilcomb collection.

made from the bones of a large bird, and bound together in pairs. They were used in all their dances, etc. Stephen Powers makes this entry concerning their use : " The musicians at this dance (yo-mus-si) play on whistles,



Fig. 408. S. 1-3.

Fig. 408, S. 1-3, shows a most unusual drill-shaped implement of obsidian. It is seven inches long. The material is beautifully banded. Was found in a mound in San Joaquin County. Barr collection.

and the more of them the Indian can get into his mouth, the more sweet and ravishing his strains are held to be. If he has a mouth full from corner to corner, all pitched to the same key, and giving forth blasts from alternate sucking and blowing of the breath, he has attained the perfection of art." (Tribes of California, page 324). These whistles vary in length from 1 1-2 inches to 9 inches, and are cut in two ways, across the bone, as in Figure 410, No. 7, and with the bones in other cases.

GAME BONES.

The third most numerous of bone implements is the game-bone commonly called "tubes." These are cylinders of bone about 3-4 of an inch in diameter, and 2 1-2 to 3 1-2 inches in length. Four bones make a set. In the game (the "guessing" or "hand-game"), two bones represent man, two woman. The latter are differentiated from the former, sometimes by carving, more often by two bands of pitched cord, wrapped about the bones. This game was and is played throughout the Pacific Coast, and the game bones are numerous.

NOSE AND HAIR PINS.

One of the finest forms is the long, polished and double-pointed pin about the size and length of a lead pencil. A hole was pierced through the cartilage of the nose and this pin thrust through to its middle. Again they were used as hair pins. When so used they were called "Kee-le" (horn) and bunches of bright feathers, or bangles of polished shell, or little flags of yellow-hammer quills were attached. Again, they were used in sets of four, being thrust horizontally through a net head-dress, or cap, to afford a level floor, or rest, for the long quill head-band that in a certain dance is fastened at the forehead by one end and trailed over the head behind.

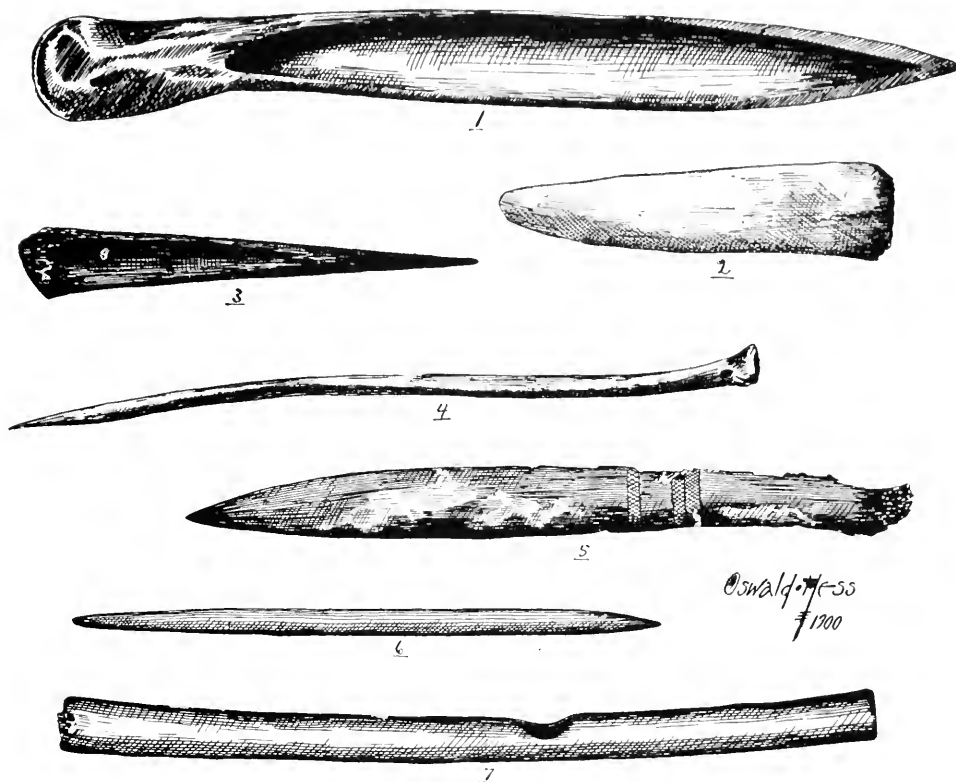


Fig. 410. S. 2-5. Bone Implements.

No. 1 is a splendid dagger, $10\frac{3}{4}$ inches long, in fine state of preservation. No. 5 is another showing three bands of etching; a rare specimen. No. 2 is a well-polished horn-flaker. No. 3 is a perforator having a high degree of polish. No. 4, hair-pin, wing-bone of a bird, unusually long. No. 6, hair and nose pin, found with three others in a grave; finely polished. No. 7, bone whistle, very long; found with its mate in a grave. These are all from San Joaquin County, about 2-5 size, and in the Parr collection.

BONE KNIVES.

Bone knives and daggers are not uncommon. They are from 4 to 18 inches in length and among the finest specimens of the kind ever brought to light. Bone beads, discs and cylinders are occasionally found. The carved bones shown in Fig. 411 were doubtless ornaments. An old Indian told me recently that they were worn in the lobe of the ear.

SPEARS OR HARPOONS.

The fish spears shown in Fig. 21 are striking specimens, and the only ones to be seen in the collections of this part of the state. They strongly

resemble Alaskan forms, and, like the labret, seem to indicate intercourse between the Central Californians and the natives of the far North. Fig. 412, No. 3, shows a bone object of unknown use. Some have expressed the opinion that it is an ornament. I must differ from that opinion. The Central Californians were experts at perforating even the hardest substances, and whatsoever objects they suspended about the person as ornaments were perforated, whether of shell, bone or stones. The lack of perforations in these hook-shaped objects is to me a strong presumption against their use as ornaments. This object was found by the writer with 51 others upon the breast of a skeleton. With the skeleton was a fine bone knife, the 2 harpoons figured here, a labret, 2 lots of red paint, a "medicine stone," 2 yards of wampum, and 15 or 20 shell ornaments. At the time the hook-shaped objects were discovered it was thought to be the first and only find of the kind. Some months later, however, I came across a scrap-book containing a newspaper account of a similar find made on the Beecher ranch, 6 miles east of Stockton. According to this clipping there were 28 specimens in this find, and one of them had 28 notches or tally-marks,—a number corresponding exactly to the number of specimens found. It further stated that 2 of the specimens were bound to a rod or staff, as if it had been used as a gig or spear.

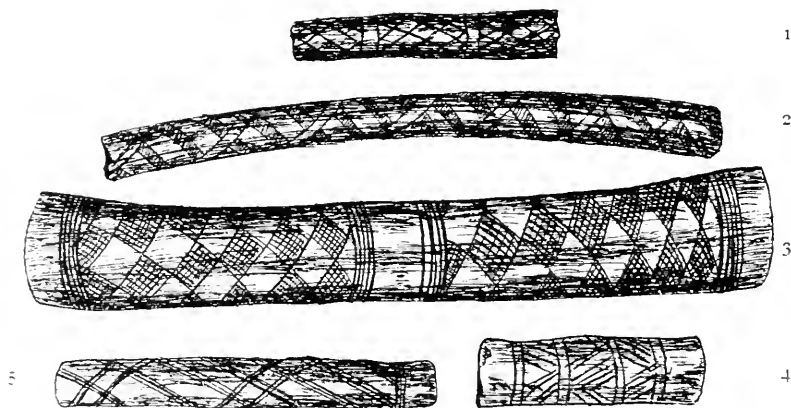


Fig. 411. S. 1-2.

Engraved bones. This figure is typical of the engraving found in the mounds of the San Joaquin Valley. The lines are much truer than appear in the cut, but we have only the textile pattern, which, I believe, is considered rudimental in the graphic art. Nos. 1 and 2 are fine specimens in the Wilcomb collection. They are from Tulare County. Nos. 4 and 5 are in the Barr collection, and No 3 in the Meredith collection.

Many implements made of deer, antelope and elk horns are found in the mounds of the large valleys. They may be classed as wedges, scrapers, flakers, root-diggers, etc. The collections hereabout have many fine examples, but I have not space for an extended description.

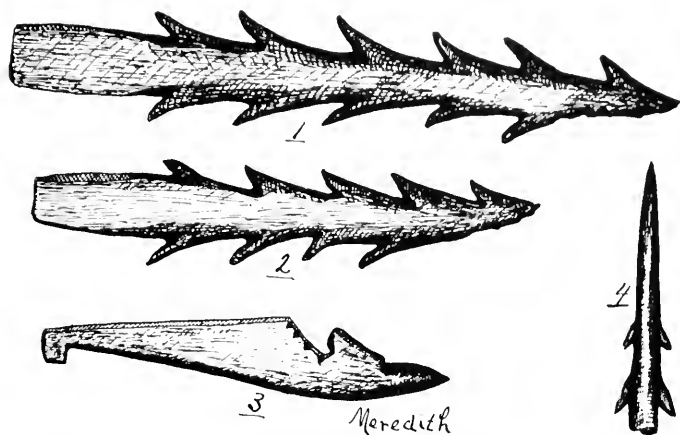


Fig 412. S. 2-5.

Fig. 412, S. 2-5, shows bone forms, very rare in this county. Nos. 1, 2 and 3 were taken from the same skeleton in a mound in San Joaquin County. No 4 is from Stockton Channel. Meredith collection.

SHELL ORNAMENTS.

The Californian was profuse in his use of sea shells for purposes of ornament. Some superficial writers have given the impression that the "Digger Indian," as they miscall him, had no taste for personal adornments. That he was quite content in stark and unbedecked nakedness. Nothing could be further from the truth; and the number and variety of shell ornaments found in the burial places of California are probably unequalled by any other section of the Union. From the skeleton of a child I removed 7 yards of wampum and 52 perforated and polished shell ornaments, and from the skeleton of a man, 16 yards of perforated olive shells. On page 338 of his "Tribes of California," Powers describes a girdle that was decorated with 214 pieces of polished abalone shell, and a hair-net with 100.

Three varieties of shells were most in use, the mussel, the abalone and the olive. The first was used exclusively for making wampum. From it they made (and still make) 2 grades; first, the flat, perforated disc, varying in size from 1-16 of an inch in diameter to 1 and 1-2 inches; second, polished cylinders about 1 and 1-2 inches in length, made from the hinge of the shell. Each variety of wampum was used as ornaments and as a circulating medium having a fixed valuation. One cylinder was worth ten discs.

The olive shell was perforated through the long diameter and strung, or it was split in halves, perforated and strung, or it was worked into the small, rectangular pieces shown in Fig. 413. These were "shingled" onto a textile and must have appeared to fine advantage. Upon the abalone, however, the Indian most depended for his ornaments. His love for this iridescent shell is attested wherever he has made his grave. Splendid gorgets, "single hangers," he called them, are occasionally found. They are polished, carved and etched, but never show the features of the human face

or the figure of an animal like those of the Gulf Coast. Professors from the National Museum, examining local specimens, thought them suggestive of Mexican types. Then come small gorgets of various beautiful designs; then the long cylinder from the thick part of the shell, with its 4 or 5 inch perforation, made with the seal's bristles,—a marvel of skill and patience. Then we enter the world of bangles, and the variety is legion; squares, diamonds, discs, corrugated discs, and so on in endless modifications of these forms. These were hung on their ceremonial "sun" and "moon" baskets, on their belts and girdles, on the head-bands and "nets" used in the dance; in squares, 2 by 2 inches, they were wrought into necklaces, and in discs of

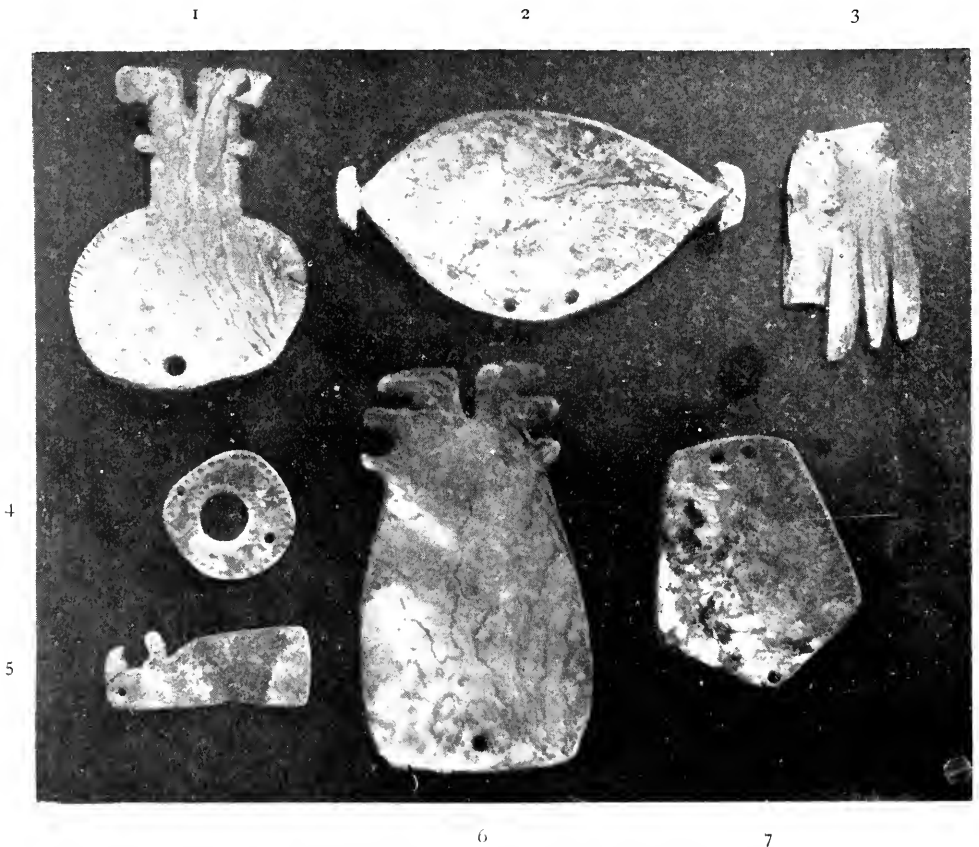


Fig. 414. S. 1-2. Shell Ornaments.

These are San Joaquin Valley types. No. 1 is a fine form etched all round. The larger specimens are about 5 inches long. We call it the "Banjo Gorget." No. 2 has graceful outlines, is etched all round, and has 2 perforations. No. 3 is hand shaped and etched on one side. Nos. 4 and 7 are etched forms often met with. No. 5 appears the same as No. 1 with one-half cut away. No. 6 is a fine etched gorget; beautiful shape and finish. These are all from Stockton and vicinity. (Barr collection).

1-2 inches were fastened to their garments. And in many other ways, with which we are not now familiar, the early Californian doubtless touched up his swart person with the brilliant abalone.

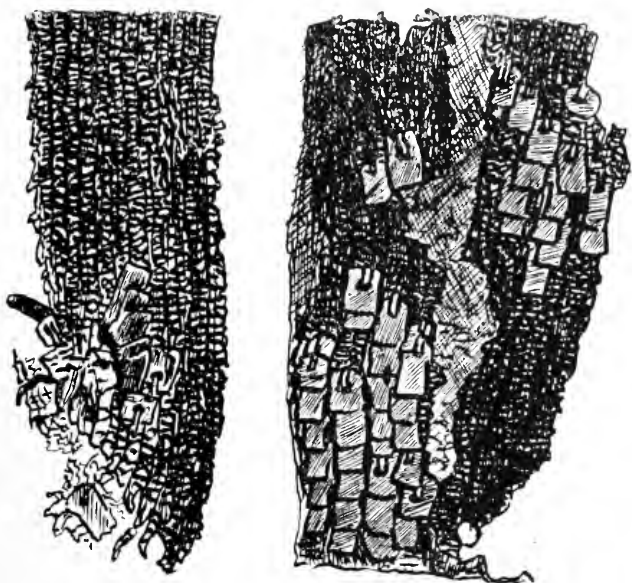


Fig. 413. S. 1-1.

Fig. 413 shows a piece of textile from the Walker Slough Mound. The article was much burned, but was apparently quite large. A piece 10 inches square was secured by the finders from whom the piece figured was acquired by the writer. The whole was shingled over in an ingenious way with pieces of olive shell. It must have been a very beautiful piece of shell work.

GROOVED STONES.

The grooved axe, so much in evidence in all eastern collections, is entirely wanting here. So is the ungrooved axe. A possible substitute for them is a large boulder grooved for a handle, and used as a maul to batter the wood fiber till it could be split out with elk-horn wedges. These are not numerous, but are occasionally found. "As late as '44, I found Indians in the Coast Range Mountains of northern California who, till then, had never seen a white man; and there I saw the stumps of cotton-wood trees, six or eight inches in diameter, which had been newly felled (as I supposed) with stone axes; for they had evidently been severed with a dull implement which gave the stump the semblance of a coarse, wooden broom; or about as a stump might look if a white man were to fell such a tree with the head, not the edge of his axe.

"But on inquiring, the oldest Indians now living say that the horns of the elk were the only thing hard enough to sever the woody fiber of the trees when they required long poles for the roofs of their large sweat and dance-houses." (Gen. Bidwell in *American Archaeologist*).

A few well developed hammer-heads, oblong and neatly grooved, are also found. In the writer's collection is an adz-shaped implement with double grooves. It is of sand-stone, 7 inches long, and 3 at its greatest

width. It was found by the writer in Napa County, and is the only one yet noted.

The net-sinkers are quite common. Stones of various shapes from 1-2 to a pound in weight, are deeply grooved; smaller than the Oregon net-sinkers, and in a general way resembling the type familiar to eastern collectors.

Another form is from 6 to 10 inches long, and 2 to 3 wide, and 2 inches thick. It is grooved from end to end on each side, the grooves being 1-2 an inch deep and an inch wide. It is of sand-stone and was doubtless used to rub down pipes, cylinders, "medicine stones," etc.

Another sand-stone, 3 by 3 inches, has a half-dozen narrow grooves and was used perhaps to point bone implements, etc.

Another form is shown in Fig. 415. The size, shape and finish of this specimen, which is not uncommon, would seem to class it with the so-called "Charm-stones," but the long groove points certainly to utility. If simple suspension had been the purpose of the groove, it would have been made around the small end of the specimen at a fraction of the labor required to groove the specimen along its length.

Of all the grooved objects none are more interesting than the labret. Two of these are shown in Fig. 418, though very poorly. They are shaped like a sleeve-button; the outer surface is usually concave and polished. The mounds in which they have been found are quite ancient, showing no evidence of white contact. I can not learn that this object was in use among the Central Californians in historic times. It would seem to suggest a northern origin for these people.

If the reader will turn to Fig. 38 in the South-west Section, he will see figured a type quite common in California, particularly so about Visalia and the upper San Joaquin Valley. It is known here as an "arrow-shaft straightener." It is usually of steatite or serpentine, and has from 1 to 3 grooves. The surface is frequently ornamented with irregular incised lines forming no pattern. Some specimens show indications of fire, and it is possible that the stones were heated and the arrow-shaft run through the grooves, being straightened and polished by the process.

Fig. 417 shows a form peculiar to the northern counties. At the Park Museum it is called a "tool holder." The shoulder and cross grooves underneath showing the method of attaching the tool. But to me, the object itself seems to be the tool, and the shoulder and grooves the means of attaching a handle. Unless the object is itself the tool, I do not understand the meaning of the groove that runs the entire length of the specimen on the underside.

PERFORATED STONES.

First in interest among perforated stones is the drill-disc or whorl; a rare and well polished disc of stone. It is from 1 and 1-2 to 5 inches in

diameter ; and from 1-4 to 3-4 of an inch in thickness. The edges are slightly beveled. The longer specimens are flat on one side and slightly convex on the other. They were used to give steadiness to bow and hand-drills. These have been mistaken for "spindle-whorls," and the lame theory advanced that the historic Californian had predecessors who were a superior people and understood the art of spinning. It is hardly necessary to say there is no true ground for such a theory.

Stephen Powers mentions "spindle-whorls of stone, some of them found in mounds of extinct tribes ; and others found among the Klamath River Indians. The Indians of to-day use no such implements for any purpose whatever." The spindle-whorl here referred to is the drill-disc. In '94 I saw one in use on a bow-drill in Lake County. In Lake, Mendocino and other Northern Coast Counties, hundreds of similar discs are in use on the bow-drills except that they are no longer made of stone, but wood or sole leather.

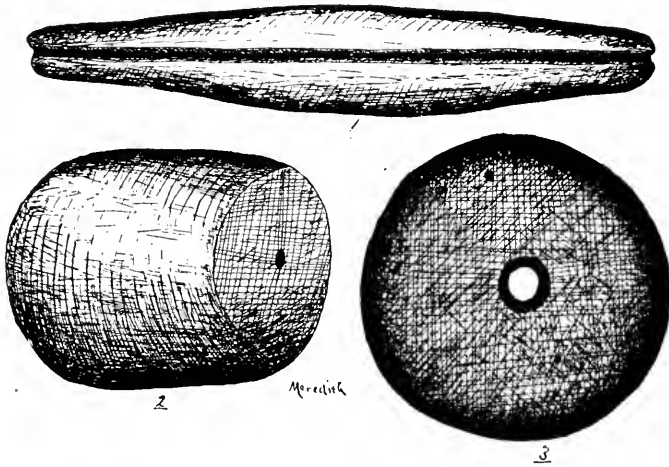
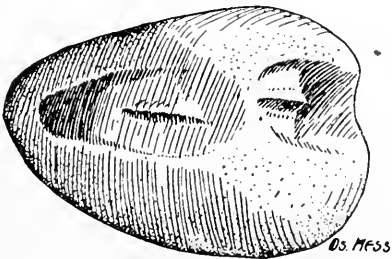


Fig. 415. S. 1-2. Grooved and Perforated Stones.

Nos. 1 and 2, hard gray stone, polished. No. 1 is grooved as shown, the groove extending the length of the specimen on both sides. No. 2 has a perforation from end to end 1-16 inch in diameter. A remarkable work for a savage. No. 3, drill disc; well polished and quite thin; 1-2 size. No. 1, Butte County; No. 2, Solano County, and No. 3, San Joaquin County. Meredith collection,



Two deep grooves wrought in a river boulder ; at the bottom of each groove is a sharp ridge. Grooves smooth inside as if by rubbing. Napa County. Meredith collection.

Fig. 416. S. 1 2. Grooved Stone.

Smooth and well finished. Hard gray stone, 7 1-2 inches long. Found in Del Norte County, Cal. Wilcomb collection.



Fig. 417. S. 1-3. Stone "Tool Holder."

"DOUGHNUT" STONES.

These are flattish stones with large biconical perforations; the size, shape, and sometimes the color, are suggestions of the doughnut, hence the name. They are somewhat like but not identical with the digging-stick stones of Southern California, so well described by Prof. Henshaw. Their use is conjectural. Game-stones, hammer-heads, slung-shots, etc., are some of the uses suggested. I have not space to discuss these or other theories as to their use.

There is another perforated stone like this, except that it is nearly spherical. They are rather rare. Some are of steatite, others of granite, basalt, and one in the writer's collection is of quartz.

On page 53 of his "Tribes of California," Powers figures two of these, and says: "In the accompanying sketch are figured two implements, said by a pioneer to have been used formerly as *bolos* in South America, being tied together with rawhide and hurled at the feet of an enemy to entangle him and throw him down." He adds that personally he prefers to call them "slung shots."

WAR CLUBS.

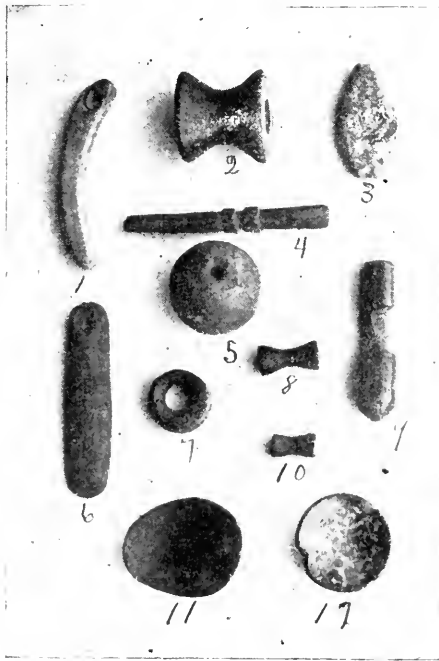
In the northern counties are found clubs of stone 15 to 20 inches in length and shaped something like New Zealand "merai," though rounder and less wide. Most of them are not perforated, but some are. One in the writer's collection is without the perforation; but I have 2 outlines, secured for me last summer in Siskiyou County, which show the perforation. These specimens are not of jade. In the Annual Report of the Smithsonian Institution for 1896, opposite page 465, are figured 2 such specimens. Brief notes accompany the illustration.

CYLINDERS.

Fig. 415, No. 2, shows a stone cylinder illustrative of the expert drilling of the Central Californians. It was found on a village site in Napa County and was doubtless used as an ornament. The perforation is too

small for a cord of any strength so it could have been used as bolas, slung-shot, etc. Another about the same size, but rounded, has an half inch perforation. In the same class with these are the stone beads that are rather numerous in the mounds of San Joaquin and Sacramento. Many of these are discs, 1-4 to 1-2 an inch thick and about the diameter of silver dimes and quarters. Others are cylinders 1-2 an inch to 1 1-2 inches in length. A very few are spheres. In the mounds on the Stockton Channel we find stone beads of a material found only in Lake County, 250 miles to the north. It is a fine grained argillite, cream colored when mined ; but when roasted by the Indian process, it turns to a fine rose-red. This is the "pink alabaster" of Powers, who evidently was not a mineralogist. It is called "luc-luc-si" by the Indians and held in high esteem by them. No. 5 of Fig. 418 shows a sphere of this material found in Stockton. Belonging to this class of ornaments are several unshaped and irregular forms perforated for suspension. They appear to be water-worn nodules which attract in some way the Indians, perhaps in much the same way that quartz crystals, concretions and other natural formations do.

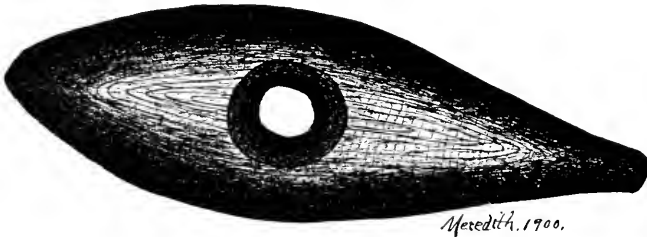
Fig. 419 shows a unique object, name and use unknown, the only one yet noted. It is of hard, black stone, was found in a creek-bed in Sonoma County by its present owner, Mr. William Stayley. To use Mr. Stayley's expression, "it is always greasy," that is to say, it has upon it, and appar-



Grooved and perforated stones. No. 1, serpentine ornament. No. 2, serpentine ear-ornament. No. 3, stone-bead. No. 4, nose-ornament. No. 5, stone pendant. No. 7, stone-bead. Nos. 8 and 10, perforated hour-glass shaped stones. Nos. 11 and 12, pabrets, deeply grooved, so as to resemble the upper and lower sections of a cuff button. Concave surfaces. Barr and Meredith collection.

Fig. 418. S. 1-2.

ently impregnating the grain of the stone, a tallowy matter that cannot be removed. Rubbed briskly, a high gloss appears. In this particular it re-



Perforated stone Hard black stone polished, "greasy," 6 3-4 inches long. Use unknown. Collection Mr. Stayley.

Fig. 419. S. 1-2.

sembles many of the "charm-stones." A number of the latter in the writer's collection have this peculiarity. Indeed, in the specimens under consideration, while larger, is of about the same shape and degree of finish as the finer "charm-stones," though the large central perforation is a marked departure from the charm-stone type.

"MEDICINE STONES OR PLUMMETS."

Perhaps no artifact found on the Pacific Coast has excited so much interest among collectors and archæologists. Numerous conjectures as to their uses have been made, all of which are doubtless familiar to the readers of this book, and not one of which, I take it, is entirely correct; or, perhaps I should say, several are probably correct in part. The evidence seems to point to a variety of uses and not to one only. The view most commonly held now, I believe, is that these objects are "medicine stones" or "charms" supposed to bring good luck and success to their owners. Mr. J. G. Henderson in an article published in the *American Naturalist*, in 1872, appears to be the first to suggest this use of the stones. Mr. H. W. Henshaw followed, in the *American Journal of Archæology*, with an elaboration of this theory. Others have followed with additional evidence in support of it. When a final conclusion is reached, however, I think it will be to the effect that while these stones were used as "charms," such use was not original and primary, but secondary, perhaps only occasional and incidental.

Personally, I have no doubt that these stones were objects of utility, designed for several practical services in the economy of the Californian aborigines. In the course of time, by a process of evolution readily suggesting itself, a few of them, like the arrow and the pestle, passed from the sphere of utility into that of veneration and ceremony. Any one knowing the Indian character intimately will appreciate the ease with which such a change could be wrought. I but lately witnessed an illustration parallel. I was in attendance upon a ceremonial gathering that continued through 5

days and nights. The native game called "hand-game" or "guessing-game" was played. Before the game began I bargained with a young Indian for his set of game-bones, to be delivered at the close of the game. The bones had never been used. The play continued for two days, and the team represented by this Indian won everything the opposition could put up. The time of adjournment had not been reached, but wishing to close my bargain, I offered the man the sum agreed upon. This he refused, and with many and earnest words explained that the bones were "good medicine" and "lucky;" that he had never done so well before. If he sold them he could never get such lucky ones again, etc. After much talk he proposed to let me have them for twice the sum agreed upon. I declined, though I really intended to take them. I imagined I would lose nothing by delay. In the meantime a company of Pah-Utes came in and joined the losers. A stake was raised and a new game started, the Pah-Utes using their own

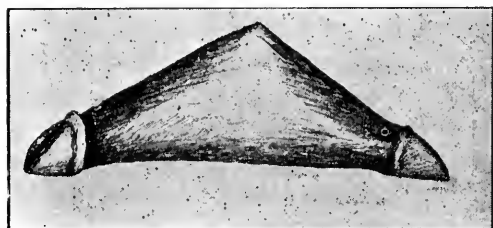


Fig. 420. S. 1-2. "Plummet" or "Medicine-Stone."

Two rare forms, which, like some California pestles, show the phallic feature. Lower specimen, Merced County, Cal., the other near Stockton. The latter is of mica schist. Barr collection.

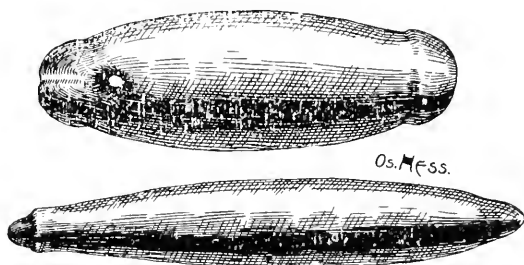


Fig. 421. S. 1-2. "Medicine-Stones."

songs and hanging them often for "luck." But after six hours they were wholly defeated, losing everything to the same set of bones. After a while I hunted up my Indian and reopened negotiations for the bones. After beating about the bush I offered him his price. To my chagrin he refused the sum and would not listen to any offer. I was given to understand that no Indian could sell such lucky bones. I then called other Indians to my aid, men who had refused me nothing I was willing to pay for, but they gravely repeated the saying that the bones were "lucky" and "good medicine;" that they could never be replaced, and it was useless to talk about buying them.

Now any one can see how a few more successes with these bones, would place them in the sphere of veneration. Any one having them in his possession would be considered an invincible player. Ultimately they would pass from the sphere of utility into that of superstition and become "charms."

So with the perforated stones I am considering. Suppose they were used as net-sinkers, or line-sinkers, as there is reason to believe they were, and remarkable catches of fish with that net or line would make for the stones the reputation of being "lucky." Continued successes would transfer them to the realm of veneration—they would become "charms." They need no longer be fastened to net or line. It would be enough to hang them over the water or from the canoe. Suppose they were used to twist bow-strings, and some were no doubt so used. Unusual success with that bow would sooner or later change the twister into a "charm," and so on.

When a stone would be regarded as lucky, it would begin to receive at the hands of the owner the finishing and polishing touches which at last produced the rare specimen of elegant finish, sometimes, but not often, found.

Moreover, they are too numerous to be charms only. After chipped implements they are perhaps the most numerous of all forms found in central California. The Barr collection contains 53. The Wilcomb collection about the same number. The Academy of Sciences and the Mining Bureau collections each had a goodly number. The writer's collection has 80 specimens, gathered in three years, and I know of as many more in the hands of farmers, etc., that I could not acquire. Messrs. Stayley and Cherry, of Santa Rosa, each have a goodly series, and Mr. Ricksecker of the same place, about 500. These, by the way, were taken the last 3 years from a single locality, *i. e.*, the bed of an extinct lake, in Sonoma County. I have communication from the superintendent of the property of which this lake-bed is part. He says that originally the lake covered about 300 acres; that it was drained for cultivation in 1870; and that larger numbers of the "sinkers" have been found by the men and sold to collectors. He further says three or four other persons collected there during the time Mr. Ricksecker collected. It is not known how many they obtained, but to be conservative let us say these three or four persons secured one hundred while Mr. Ricksecker was collecting five hundred. That would give us six hundred for three years or two hundred per year. Suppose the same rate of yield obtained for the whole period since draining the lake, (it was doubtless much larger during the first few years), and for the whole time we have a yield of 6,000 *specimens*. I need not pause here to emphasize the significance of such numbers, or that of the fact that they were found in a lake-bed.

I have twice examined Mr. Ricksecker's unusual collection. The workmanship is not excellent. Very few of any of the specimens exhibit the elegant finish sometimes seen in these objects. The collection shows wide variation in form and few of the specimens are perforated. Many show the

asphaltum used in attaching the line. The material shown in the specimens is strictly local ; being basalt, actinolite, steatite, mica schist, serpentine, etc., all of which abounds in the immediate vicinity. In this case at least, the statement of a fanciful writer, that "that the great portion of the charm-stones found appear to be made of rocks *not* found in the localities where the implements were used," does not hold good.

If these stones have been seen in use as "charms," and I do not doubt it, they have been seen by intelligent observers in other uses also.

A pioneer, Dr. J. C. Simmons, now living in Modesto, this state, visited me recently. On my desk was a fine "charm-stone." In the course of our conversation I called his attention to it. He took the implement in his hand, saying, "Ah yes, I saw the Indians at San José using this stone in '52 to twist their lassoes." He then proceeded to show to me how, with one end of the string fast to some stable object, and the other fastened through the perforation of the stone, they had used the stone to twist the rawhide.

All of these stones shown in the Section of Southern California, and to which I refer by permission, are from Central California, save three. Numbers 29 to 33 are quite rare ; the others are commonplace specimens such as abound by hundreds in the central counties. They illustrate a small number of the different forms occurring here.

POTTERY.

Throughout the area covered by this section pottery vessels are entirely wanting, except between Visalia and the Tehachapi Range. In that region it occurs sparingly and is the result of contact with intruding tribes. These poured in through the Walker and Tehachapi Passes, from Nevada and elsewhere, completely dominating the local inhabitants. Whether the pottery now found about Bakersfield and Visalia was brought in by the invading Pah-Utes, or whether the Yo-Kuts, receiving the idea from the invaders, made it themselves, is one of the questions yet to be settled. A few small collections are in the hands of persons living in the vicinity where it occurs. By far the best collection, however, is in the possession of Mr. C. P. Wilcomb of San Francisco. It consists of 15 whole and perfect vessels. Two or three are figured here. The specimens are without paint or decoration, blackened with smoke. A few show the coil pattern. The walls are quite thin. Dishes oblong and milk-pan shape, pots, jars and oval-bottomed cups. Some have flat, thin handles, projecting horizontally from either side, as seen in Fig. 423. A pottery pipe, trumpet-shaped, from the same locality, is in the Wilcomb collection. Powers says : "Near Freestone, in Sonoma County, I saw in the possession of the finder, what was probably a spindle-whorl (drill-disc) of pottery, the only instance of the kind I know of."

In the San Joaquin and Sacramento Valleys occur various forms, balls, discs, perforated discs, bell-shaped, spool-shaped, and pestle-shaped, etc., all of pottery. These have never been figured or described in any way. In treating forms entirely new, text, without illustrations, is not effective. I will, therefore, content myself for the present by simply noting the presence of these objects.

STEATITE OBJECTS.

The use of steatite for the manufacture of various forms was general from one end of California to the other. The resultant artifacts are uniformly of superior design and finish. Local predilections aside, I think the California aborigines excelled all others in this particular. Objects of this material are numerous at the northern and southern extremities of the territory treated in this section. Though separated by six hundred miles, the forms are practically the same. Oblong platters are notable, also the same form, and round, shallow vessels with long, skillet-like handles. Fine boat-shaped vessels, elegantly finished, are also found in both localities. Also various, bowls, pots and ollas. In the southern California section are figured two of the latter. They rest with the Park Museum collection, and are labeled as coming from the shell-mounds of Alameda County, near San Francisco Bay. They are fine specimens for Central California.

In the mounds at Stockton are found finely finished jars of steatite. These are apparently peculiar to this locality. One in the Barr collection, well worthy of illustration, is 12 inches high and 5 inches in diameter. The wall is one-fourth of an inch thick at the top. The cavity is 3 and 3-4 inches deep, and at the bottom is marked with 13 incised lines. Many other forms in steatite occur, but are treated under different heads.

PIPES.

Pipes in California are for the most part tubular in form. But an interesting departure from that type is found in the northern counties. It is circular, with a diameter of about 2 inches, and a thickness of 3-4 of an inch. The bowl and stem-aperture are both in the periphery entering at



Fig. 422. S. 1-8.

Pottery vessel, something more than a gallon. Thin, brown and undecorated. Tulare County Calif. Wilcomb collection.

Pottery vessel, about 1-2 gallon. Tulare County. Wilcomb collection.



Fig. 423. S. 1-11.

right angles with each other. The material is of sand-stone and the fine argillite of Lake County.

Dr. J. W. Hudson, of Ukiah, sends me pen-drawings of two fine tubular pipes found in a burial place in Potter Valley. Dr. Hudson, who is an expert in Pomo Indian lore, says the traditions of these Indians are persistently against the use of such pipes by these people. He further says the material is foreign to that locality. The pipes are probably relics of intruders from the North.

Pipes in the central valleys are scarce. I have seen none longer than 6 inches, I believe. Most of them are less than that length. They were probably used with a mouth-piece of bone or wood. The material is ser-

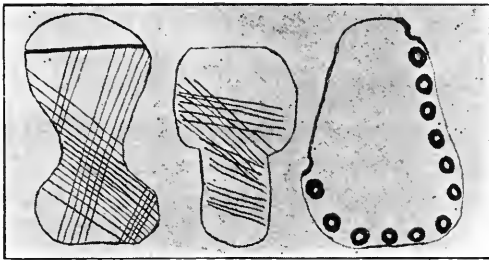


Fig. 424 S. 1-5.

Steatite dish. Tulare County, Cal. Wilcomb collection.

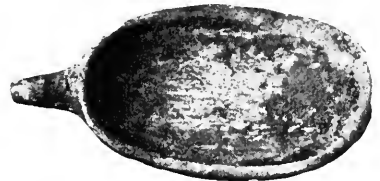


Fig. 425. S. 1-14.

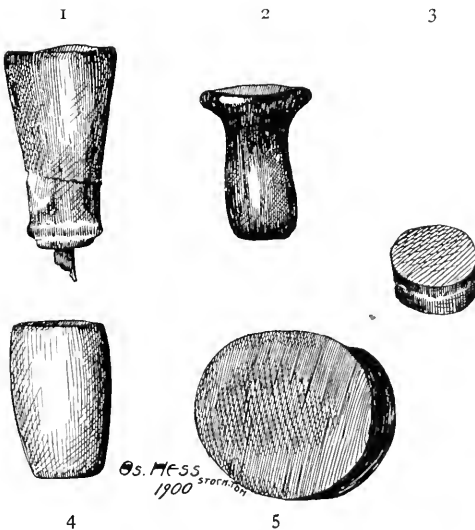


Fig. 426. S. 1-2. Pipes and Labrets.

No. 1, black steatite pipe, with bird-bone mouth-piece. No. 2, translucent argonite pipe. No. 3, black steatite pipe, flaring mouth. All intended for wooden or bone mouth-pieces. No. 4, unfinished labret of steatite. No. 5, labret of black steatite, grooved around and concave surface. Near Stockton. Barr collection.

pentine, steatite, aragonite, and, in one instance, a very hard, brown stone, I am unable to identify.

In the northern counties the tubular pipes are much longer and more numerous. One in the collection of Mr. R. J. Smith is 22 inches. Two especially fine specimens in the Wilcomb collection are, respectively, 12 inches long and 1 inch at the greatest diameter (serpentine) and 11 1-4 inches long and 3-4 of an inch in diameter (steatite). One in my collection is 11 inches, and Dr. Ream (Siskiyou County) has several longer.

On page 584 of the Report of the National Museum for 1897 is figured a pipe showing grotesque forms, reported as from the American River, California. There must be some mistake about the specimen. I know nothing about the details of the find, but the pipe speaks for itself. Its origin was certainly not in California, but in the far North-west.

MORTARS AND PESTLES.

In numbers, variety of forms and excellence of workmanship, California must lead all North America in the matter of mortars and pestles. The superb stone bowls (Figure 427, a,) are marvels of skill and should entitle the Californian Indian to first place among ancient workers of stone. These splendid specimens are found at Bakersfield and Visalia, but may have been brought over the range from southern California. In the same locality are found smaller bowls of similar shape, but without the wide rim. Two specimens in the Wilcomb collection are quite like the unusual bowl found in Ohio, figured in the "Antiquarian," Vol. 1, page 213. The California specimens, however, are smaller, with walls less than half as thick, and perfectly polished.



Fig. 427, a. S. 1-8.

Stone bowl. I have classed these with mortars. This is one of five splendid specimens in the Wilcomb collection: It is of sandstone, smoothly finished inside and out. The walls are an inch thick, and at the top widen out into a rim of two inches. It is $21\frac{3}{4}$ inches diameter and 14 inches deep. Found near Visalia in Tulare County.

In Solano and Napa Counties we have small saucer-like mortars; and in Butte County the opposite in tall, upright mortars (Figure 427, b). In most parts of the state we have the large, finished, flat-bottomed specimens, shaped like the flower-pot. In all central California we have tiny specimens, not so large as after-dinner coffee cups. In Modoc County and northeastern California, we have the conical mortar with its sharp base, that must be planted in the earth before the mortar will stand up right. The

finest specimen I have seen of this type is in the collection of Mr. Stayley. Strangely enough, this specimen was drawn from the waters of San Francisco Bay by a fisherman's net. How it got so far from its "habitat" is an interesting question. In addition to all these, are several ruder forms,—an angular piece of stone, or a river boulder with a cavity sunk in it. Then we have the stationary mortar—a granite or trap outcrop, ten to twenty feet square, with five to thirty-five cavities worked out, some to the depth of fourteen inches. Occasionally a portable mortar will have two cavities.

Upright mortar. A fine specimen 16 inches high, and 11 inches across the top, where the wall is an inch thick. The cavity is $9\frac{1}{2}$ inches at the bottom. The base widens into a flange or rim. Butte County, Cal. Wilcomb collection.

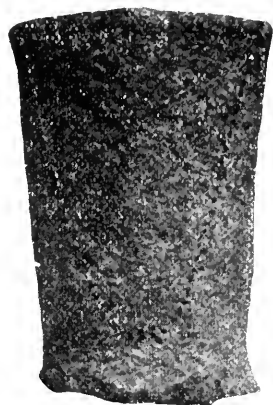


Fig. 427, b. S. 1-8.



Fig. 427, c. S. 1-7.

Mortar and pestle. This mortar is typical of a form quite common in central California. A common "roller," which, in different lengths, abounds, leans against it.

Pestles are equally varied and well-finished; hammer-stones, polished and unpolished, and of various sizes, are numerous. Crude pestles, merely long, water-worn stones, also abound. The roller pestle was a favorite. These are usually well finished and from 10 to 30 inches. Some specimens taper at each end, some do not. A form frequently met with is well

finished and tapers to one end. It is from 8 to 16 inches, quite rarely longer. Short, finely-finished pestles (Fig. 428, Nos. 4 and 5) with hand-hold worked out, are found as far south as Sacramento. The type belongs to the far north and was brought down by the intrusive tribes. The same is true of the long, well-finished pestle, with a "shoulder" near the heavy end, (Fig. 429). These fine forms are numerous in the northern counties, and are found as far south as Lake County, perhaps farther. This form seems to be fully four times as numerous as the "ball-bat" pestle, (Fig. 430, No. 8). This fine pestle apparently belongs to the southern counties. A good specimen is shown here from Tulare Lake. A splendid specimen, 22 inches long, was taken from a mound near Stockton in 1898. So far as I can learn this marks its northern limit. The slender handle ending in a large bulb is a type belonging to Lake, Mendocino and Napa counties. No. 7 is a unique development of that type. This specimen is no doubt the most remarkable pestle on record. The mounds about Stockton yield a highly interesting type. The form is so suggestive that not without reason the specimens have been called phallic emblems. Dr A. T. Hudson of this place, in a work entitled "Ancient Sex Worship," devotes some space to that theory of their use. It seems to me that this form was intended to express the idea of virility, if nothing more. Yet the pestle is exclusively the implement of the female. Let us hope that one of the learned professors in the service of the government will treat the subject presently, and clear up this field of curious speculation.

MISCELLANEOUS FORMS.

Numerous stone spheres, two or three inches in diameter, are found in central California. They apparently belong to two classes. The first is

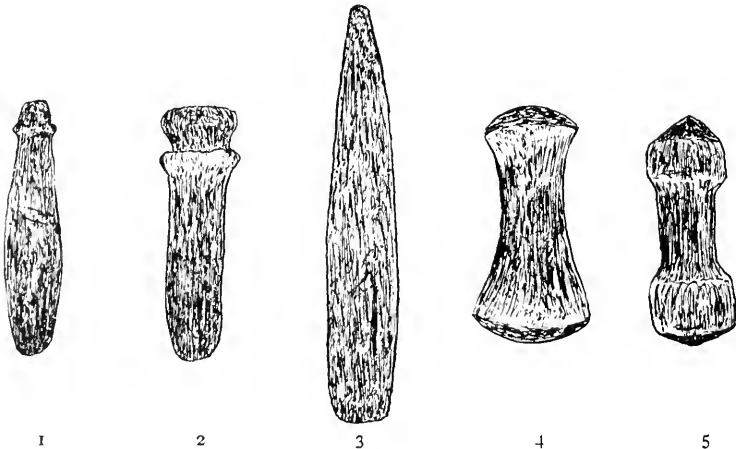


Fig. 428. S. 1-7.

Pestles. Nos. 1 and 2 show the so-called phallic forms. The upper end of No. 2 is concave, Stockton types. No. 3 is distorted in the drawing. It is the long, slender wine bottle shape, with a polish as smooth as glass. A specimen of rare finish, Humboldt County. No. 4 is a fine specimen from the same locality. No. 5 was found near Sacramento. No. 2, Barr collection, others Meredith collection.

unpolished and usually the larger. It is an acorn-sheller. The second is highly polished; hence not used to strike anything. It is said that they were used in playing a certain game, but I am unable to learn of any reason for this belief.



Pestle. Northern California, 22 inches long, finely polished. Jewett collection.

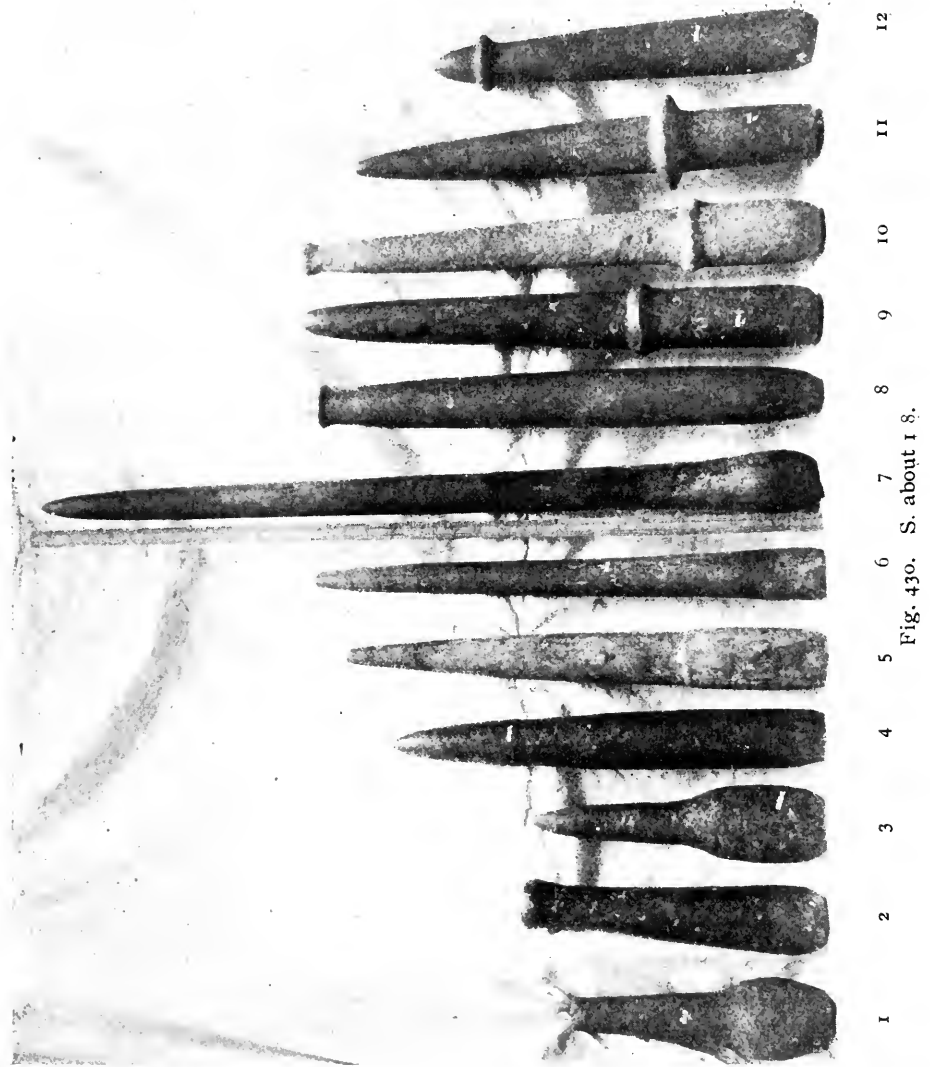
Fig. 429. S. about 1-7.

PAINT.

In all the mounds that have been opened in the vicinity of Stockton, paint has been found, and *red* paint at that! In the preface to his "Tribes of California," Powers says the reader "must lay aside the gory scalplock, the torture of the captive at the stake, and the *red war-paint* of terrible import." This author, so generally correct, is evidently at fault here. The paint from the mounds is the red cinnabar ore, which, in its purity, is the vermilion of commerce. Sometimes it has been pulverised and packed into shells or other moulds. Oftener it is uncrushed ore, still showing the marks of the knife or the scraper. The use of this paint has led to some curious mistakes on the part of inexperienced "scientists" who have examined the bones of dead Indians. Every now and then the papers announce that "Indian skeletons of great antiquity were discovered at such and such a place, and that Dr. So-and-So or Prof. Blank found in the diseased condition of the bones unmistakable evidence of venereal maladies among the ancient Californians," etc. Only lately a San Francisco physician, holding a high official position, unearthed an Indian skeleton which he claimed showed the presence of "serious bone diseases" which he forbore to name. Now the fact is that cinnabar is a sulphuret of mercury. I have seen specimens of cinnabar from Lake and Santa Clara Counties, too, that glistened with globules of native mercury. The excessive use of this ore as paint rubbed into the skin, produced salivation, and not only salivation, but chronic salivation. Many pioneers witness to this. The Indian treatment for disease, a sweat and a plunge into cold water, greatly intensified the evils of this mercurial poisoning, and produced the results noted in the bones of the dead. Any attempt to show that the aborigines were affected with venereal disorders must fail; from all such they had absolute immunity.

A CELT.

In the writer's collection is the nearest approach to the eastern celt I have yet seen. It is of hard stone, well polished. It is an inch and a half in thickness, which it maintains to within three-quarters of an inch of the edge, when it is beveled abruptly to a cutting edge. It is from Butte County.



Pestles. This splendid series of pestles is in the collection of Prof. C. P. Wilcomb, of San Francisco, and shows but a portion of his remarkable collection of these implements. Nos. 1, 2 and 3 are Lake and Mendocino County forms. No. 4 is from Siskiyou County, and is notable for having a depression on hand-hold. No. 5 is from Humboldt County. Nos. 6 and 8 are not from my territory. No. 7 is from Lake County. The yardstick beside it shows the pestle to be less than thirty-six inches; the slender, tapering handle is finely polished. The workmanship throughout is the very best. The specimen was purchased by Mr. Wilcomb from an Indian in whose family it had been as far back as the Indians could tell. It was a "tribal pestle," and as such was guarded with the greatest care. It is probably without an equal in any collection. No. 10 is a fine specimen from Lake County. No. 11 is from Siskiyou County. No. 12 is from Tulare County. These specimens must be seen to be appreciated at their full value.

RUBBING STONES.

Large stones, two feet square, smooth and slightly concave on one side, are found. They were used to polish shells, wampum, etc. Small, fine-grained stones, thin and long and smooth, are found also. They were used for rubbing and polishing. Similar stones are called "Indian Scissors," because they were used to nick off the hair by placing the lock on another stone and striking with this one. In Sonoma County are found a great many sand-stone rubbers 2 to 5 inches long. They have four equal planes, and each end terminates in a pyramid. They seem exactly suited to shaping the "sinkers" so numerous in that county.

A VOTIVE OFFERING.

Dr. J. W. Hudson, of Ukiah, recently brought to light a relic which I think has never before been noted. He mentions it to me in a letter which I am permitted to quote. He says: "It is an oval or biscuit-shaped stone of apparently clay formation, in fact, it is an almost exact votive offering, being a cake of nut-bread baked in a thin covering of yellow clay, and cast into the funeral pyre of departed friend or relative. The clay has become stone, and is distinguished externally from other boulders of like form by a distinct ring on its surface made by the escaping moisture within. When sawed open the contents are very characteristic, brownish, softish and little changed from the original dough. I have called them "panicular." These highly interesting specimens were unearthed from an ancient burial place in Potter Valley.

"CRESCENT" OR "BANANA" STONES.

Well rubbed stones about the size and shape of a banana are occasionally found. Professor Holmes figures one opposite page 114, "American Anthropologist," Vol. 1. The specimen is one of the noted Table Mountain finds. In the collection of the State Mining Bureau is a second specimen. It differs from the above mentioned, in that it has no groove about the center, and the under, or concave portion, is a plane. On the label it is called a pestle. Why it is so called, I cannot tell.

In the Wilcomb collection is a hook of steatite. It is shown in Fig. 431.

EFFIGIES.

Effigies were not made by the central Californians, though the tribes that invaded California from the North did make them. The only effigy found in central California of which I have any knowledge is in the Wilcomb collection. It was found in Lake County. It should, perhaps, be regarded as a "stray," having passed by traffic or otherwise from northern California or Oregon. It is of black steatite, well finished. Two views are presented

here. The front view resembles a mouse, the profile is suggestive of a sheep or doe. Fig. 432.

Fig. 433 shows an effigy tomahawk. This form is not uncommon in Siskiyou and neighboring counties. Specimens somewhat similar to this are in the collection of Dr. Ream.



Steatite hook, Wilcomb collection. Tulare County, California.

Fig. 431. S. 2-5.

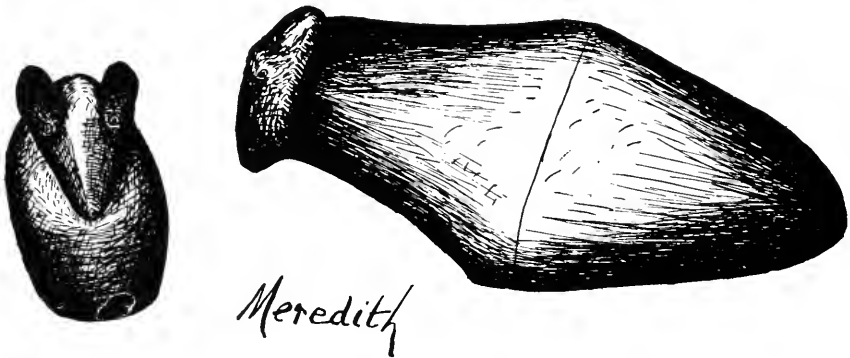


Fig. 432. S. 2-3.

Two views of an effigy; black steatite. Collection C. P. Wilcomb. From Lake County, California.

Effigy tomahawk. Hard black stone. Collection of the Academy of Sciences. From Siskiyou County, Cal.

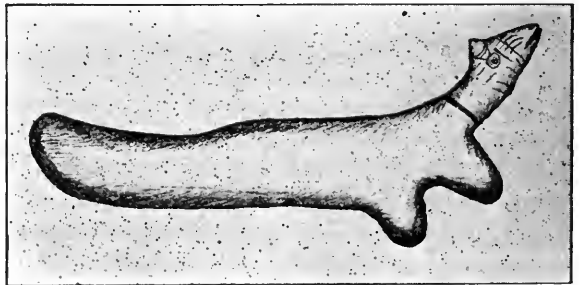


Fig. 433. S. about 1-6.

The specimen figured is in the collection of the Academy of Sciences. It is about 16 inches long and 2 wide. The fore-legs of the animal form the cutting blade. The head is thrown well back. But for the short ears it would seem to be the head of a deer. This is the more suggestive when it is remembered that deer strike with the fore feet.

STONE CEREMONIAL KNIVES.

Fig 434 shows two rare ceremonial knives. No. 2 is of fine sandstone, about 16 inches long, with a broad blade that is reduced to a sharp edge. It was found on a village site near Vacaville, and would make a formidable weapon. (Writer's collection).

No. 3 is a double-edged and beautiful specimen. The material is mottled green and white serpentine, which I am not draughtsman enough to show. It is finely polished, and not much less than 13 inches long. It is in the collection of Mr. A. B. Carr, Etna Mills. Two specimens similar to this one, but not nearly so fine, are in the Jewett collection, now installed in the Park Museum. All three specimens are from Siskiyou County. Like the chipped ceremonials, these knives are of extreme age, if not prehistoric. Work of this class is not done by the Indians of to-day.

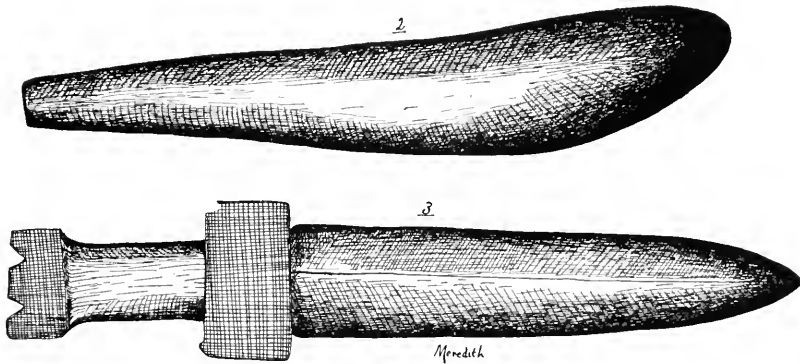
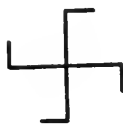


Fig. 434. S. about 29.

Ceremonial knives. No. 2, sandstone, Meredith collection, Solano County, Cal. No. 3, mottled green and white serpentine. Carr collection, Siskiyou County, Cal

I am particularly indebted to Prof. C. P. Wilcomb, whose splendid collection is installed in the Golden Gate Park Memorial Museum; also to Prof. Jas. A. Barr, of Stockton, whose collection of San Joaquin Valley relics is by far the most complete yet assembled; also to Messrs. Ricksecker & Stayley, of Santa Rosa, whose smaller, but interesting collections, were also placed at my service for study; also to Mr. Os. Hess, of Stockton, for several excellent pen-drawings. Without the courtesies of these gentlemen, it would have been impossible for me to properly represent my section.



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SECTION X.

ST. LAWRENCE BASIN AND CANADA.

[Mr. G. E. Laidlaw, of Victoria Road, Ont., was to have written this section, but he accompanied the Strathcona Horse to South Africa in defense of Great Britain before he had put his notes in form for publication. Mr. Mac Wilkinson, of Woodstock, Ont., who is exceedingly well posted on the region, added such descriptions and illustrations as were deemed necessary to complete the section. To both these gentlemen's reports I have made additions and changes, but the credit should be equally divided between them.—W. K. M.]

Copper objects are found in profusion in Michigan, Wisconsin and portions of Canada. In short, the region is peculiar. Many copper plates, ear ornaments, sheet copper, etc., have been found in the Ohio mounds, but the mound copper, as a whole, is quite different from that of the Lakes. We shall devote more space to the copper of the St. Lawrence region than to the other interesting objects found therein.

Next to the copper the stone ornaments and ceremonials of the Michigan-Wisconsin part of the section are most characteristic. The differences between them and those of other regions can best be understood by an inspection of Figs. 438, 453.

Mr. David Boyle, Curator of the Dominion museum at Toronto, Department of Education, is an authority on the archæology of Canada. We can do no better than to refer readers to his numerous reports,—published by the Canadian government in the form of bulletins from time to time under the direction of the Minister of Education. His hundreds of illustrations cover most of the known types from Eastern Canada through to the Coast. In addition to the descriptions by Messrs. Laidlaw and Wilkinson we have depended largely upon Mr. Boyle's published reports for information. Mr. Laidlaw has written several articles for the *American Antiquarian*, '92 to '99. The archæology of Canada has been practically ignored by American observers. The field is very broad and it is only during the last 15 years that serious attention has been given it. The forms from eastern Canada are quite different from those of western Canada. Central and northern Canada contain objects not found in Michigan, Wisconsin, along the St. Lawrence, or in northern Minnesota.

POTTERY.

Whole specimens of pottery are comparatively scarce in Ontario. Nevertheless a large quantity was evidently made, for nearly every village site produces an immense number of sherds. In every case the pots were made round bottomed and without legs. Occasionally, however, fragments are found which at one time evidently belonged to square-topped pots, and I have seen a few fragments showing lips. Pottery from this district is usually decorated with fanciful designs and the fragments nearly always show a systematic regularity in markings. A remarkable difference exists, however, in the pottery found on different village sites. For example, at one village site in North Oxford, Ont., near the village of Wolverton, pottery of the most common kind is found. It is well made, strong, and nicely ornamented. At Druenko, however, only two miles distant, a rougher pottery is found. It is of a much poorer quality, and is all marked with simple zig-zag lines. To the south of Oxford again a thicker and much coarser pottery appears, which must have been very inferior indeed. The forms, as a whole, are like New England and East Alleghany vessels.

FLINT RELICS.

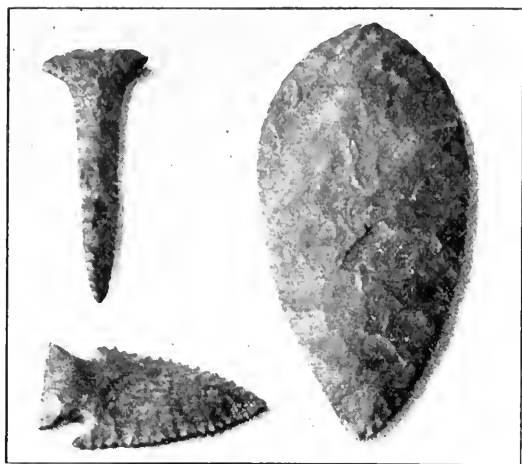
The flint relics of Ontario produce but few peculiar or unique forms. That is, although we find immense numbers of them, yet the same types are common to other localities.

The material is usually chert. The main source of supply, for the Neutrals at least, was at Point Apino, on the north shore of Lake Erie. This chert must have been very suitable for the purpose, as it evidently chipped well and did not break easily. We find but very few large spear-heads, the most ranging from $2\frac{1}{4}$ to $3\frac{1}{2}$ inches in length.

Of knives we have many of the common forms. Immense numbers of arrow-heads are also found, being usually made of chert. War-points are common, and range from a long narrow to a short equilateral shape. The long specimens are usually very thin, but both, as a rule, have concave bases.

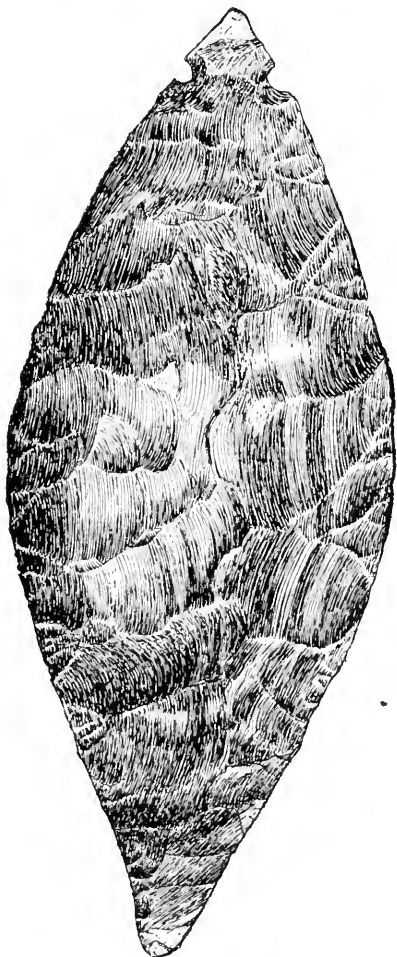
"Turtle-backs" and "bunts" are quite often found. "Caches" of flint are very rare in Ontario. We have only heard of one—in Middlesex County.

The flint relics from the old Algonquin territory along the Ottawa are very inferior to those farther South and Southwest.



Drill, serrated arrow-head and leaf-shaped implement. All of flint. Very fine specimens. Collection of Mr. J. G. Reeder, Calumet, Mich.

Fig. 435. S. 1-2.



Fine notched spear-head secured by Prof. Harlan I. Smith in the Saginaw Valley, Mich. This form is peculiar to Ind., Ills., Mich., Canada, etc. Frequently we find large flint leaf-shaped implements in Ontario, usually unnotched.

Fig. 436. S. 1-1.

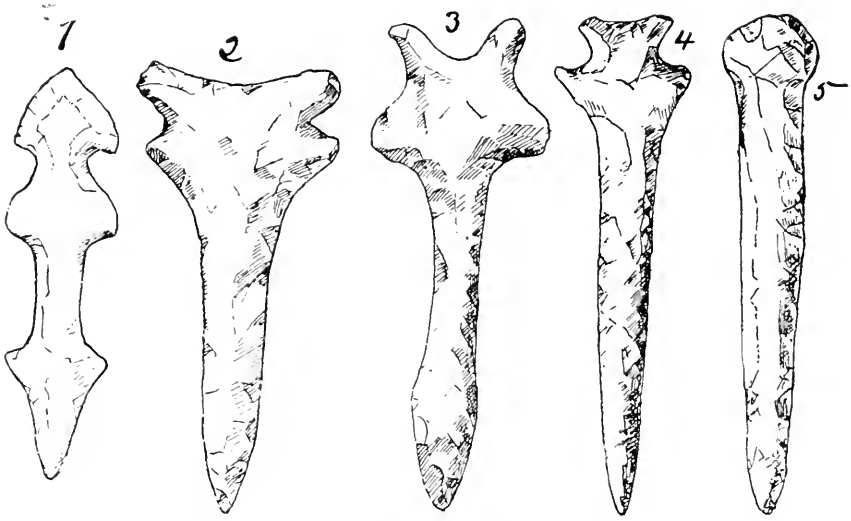


Fig. 437. S. 1-1.

Typical drills or hair-pins. While not exclusively found in the St. Lawrence basin, the figure will serve to illustrate the forms.

- | | |
|--------|------------------------|
| No. 1. | Found in Wis. |
| No. 2. | " Washington Co., Ind. |
| No. 3. | " Wis. |
| No. 4. | " Gordon Co., Ga. |
| No. 5. | " " " " |

CEREMONIALS.

Probably in no part of America are ceremonial objects, including banner stones, gorgets, bird and bar amulets, more plentiful than in Ontario. The Provincial Museum in Toronto has a wonderful collection of these objects, a very large percentage of which, including the finest specimens, came from the territory at one time occupied by the Neutrals.

They are usually made of huronian slate, but here, as elsewhere, very many of the banner stones are found in a broken condition.

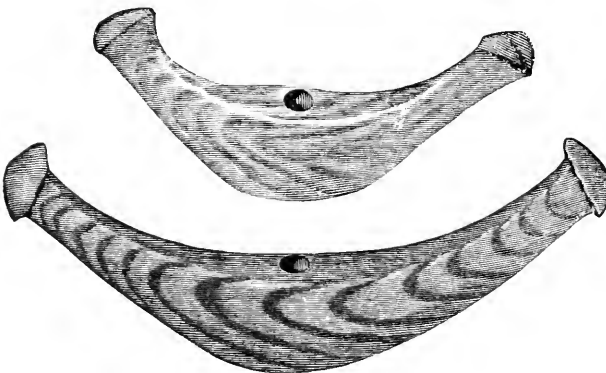


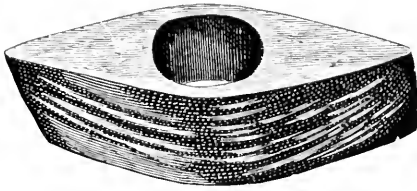
Fig. 438. S. 1-2.

From Central Canada.

Illustration reproduced from Notes on Primitive Man in Ontario; David Boyle; Toronto, '95.

These are found in all the different degrees of curvature until the "pick-axe" type is reached—in which the arms are nearly straight.

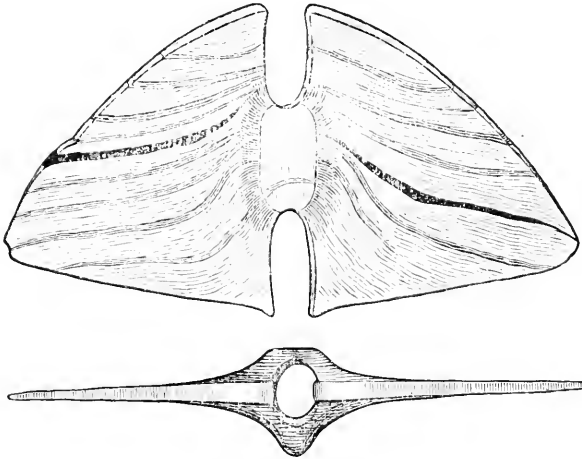
The "butterfly" form is frequently found, but usually in a broken condition. Most slate objects are superior to those of New England, Pennsylvania, New York or Virginia.



Slate object; use unknown. Mr. H. P. Hamilton's collection, Two Rivers, Wis.

Fig. 439. S. 1-2.

We find some ceremonials shaped like Fig. 440. They are very finely wrought, and quite frequently these are broken and then rebored—a small hole on each side of the main hole—so they can be used again.



Reddish-brown, purple slate. Very dark streaks. Found in Waukesh Co., Wis. Original in Milwaukee Public Museum.

Fig. 440. S. 1-2.

Grayish slate. Found in Wisconsin. Original in Milwaukee Public Museum.

For excellent drawings of Milwaukee Museum specimens we are indebted to Mr. Chas. E. Brown, of Milwaukee.

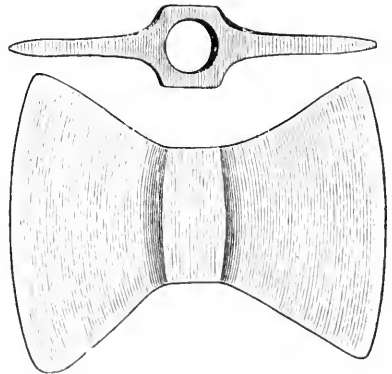


Fig. 441. S. 1-2.

Large numbers of gorgets are found in Ontario, usually in the vicinity of village sites. Not quite so many in Wis., Mich., Minn.

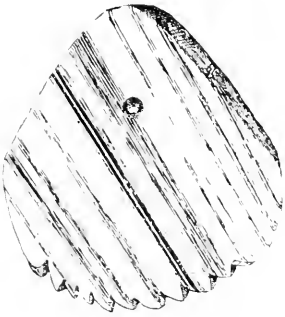


Fig. 442 is a gorget from Oxford Co. The teeth at the lower edge are cut in at an angle.

Fig. 442. S. 1-2.

Fig. 443 is a bangle or "ear-drop" of huronian slate, from Oxford Co. Full size.

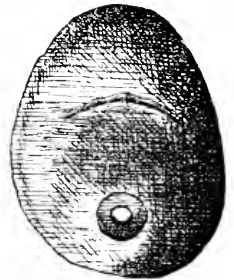


Fig. 443. S. 1-1.

In Ontario we occasionally meet with the boat-shaped gorget. (See Nos. 35 and 36, Fig. 153, page 119). They are usually, if not always, doubly bored.

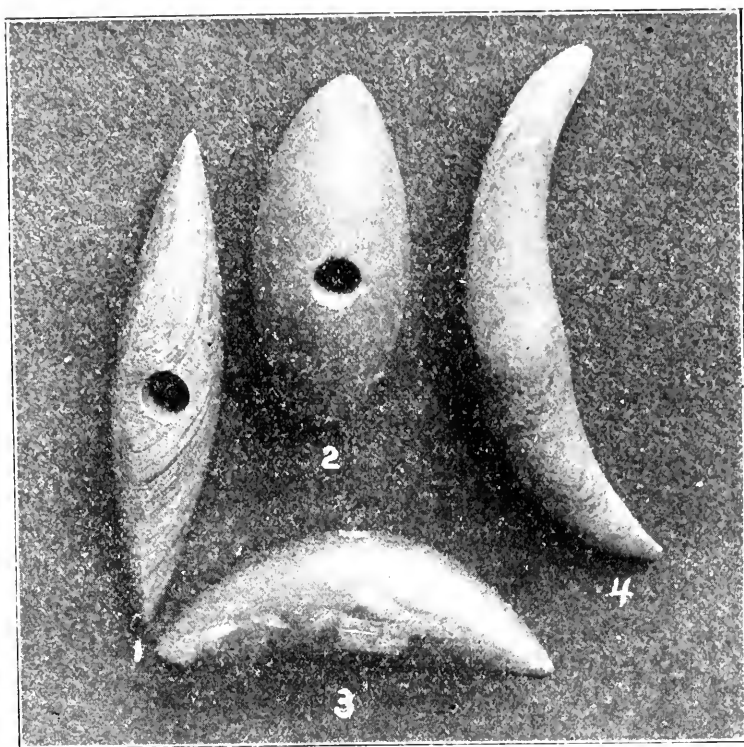


Fig. 444. S. 1-2.

Perforated crescents or "pick ceremonials," from various localities in Michigan and Wisconsin. Collection of the Rev. James Savage, Detroit.

Peculiar ceremonial. Flat, of banded slate. A variation of the type shown in Fig. 439.

Found in Southern Wisconsin.

Milwaukee Public Museum.

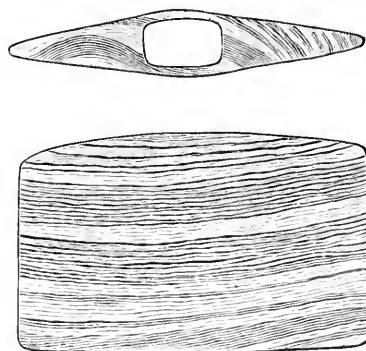


Fig. 445. S. 1-2.

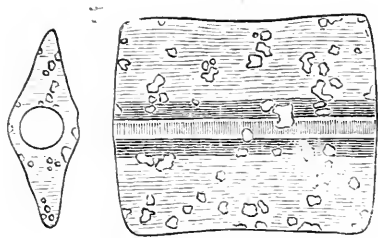
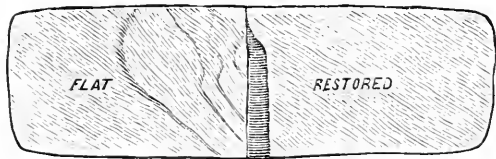


Fig. 446. S. 1-2.

Thick ceremonial of greenish-colored stone, containing large porphyritic crystals. Milwaukee Public Museum Col.



Long, flat ceremonial of dark purplish slate. Found in So. Wis. Milwaukee Public Museum Col



Fig. 447. S. 1-3.

s t a b c

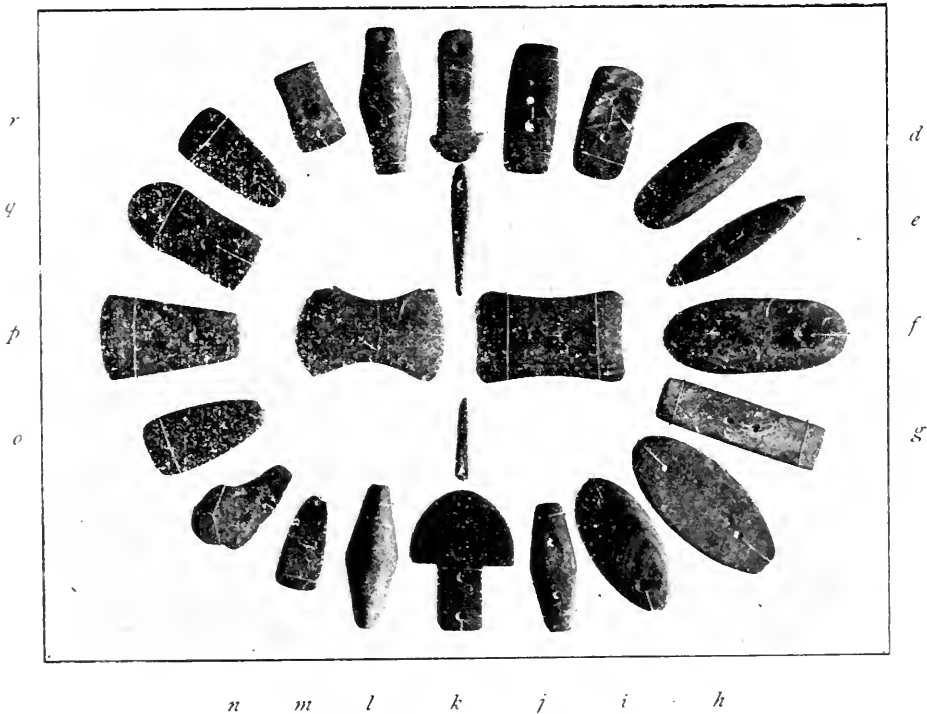


Fig. 448. S. 1-5.

Fig. 448 is a group of ornaments in Mr. E. L. Guthrie's collection, Marion, Ind. It is introduced (out of place) in this section because most of the forms occur in the St. Lawrence region, whether Canada or the States. Two tablets in the center are typical, one being concave, the other with nearly straight sides. The concave form is the more graceful of the two.

k is more confined to the north and is a very rare and interesting specimen.

a is also rare.

In these ornaments we have all kinds. *g* is the square-corner form; *f* is oval; *e* has pointed ends; *l* is coffin shaped, flat on one side and convex on the other. *l* is one of the same objects. They are made similarly whether found in Canada, West Virginia, Illinois or Kentucky. *m*, *v*, *s* are forms of the "single perforation" ornament.



Fig. 449. S. 1-2.

A bar amulet from Waterloo Co., Ontario. More of these are found here in New York and Ohio than elsewhere. They vary from a straight bar to the bird-stone ceremonial form.

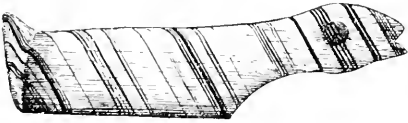


Fig. 450. S. 1-2.

Bird-stone ceremonial from Oxford County, Ontario. A very beautiful specimen of banded slate. Supposed to have been worn on the head.

Fig. 451 is a tablet-shaped ceremonial. Wisconsin.

Fig. 452. A slender pendant with lines or "records" along its margin. Michigan.

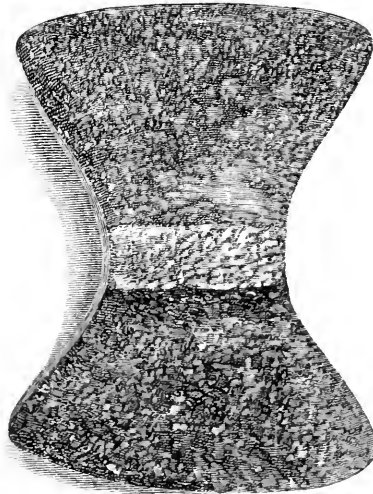


Fig. 451.
S. 1-1.



Fig. 452.
S. 1-2.



Unknown stone object. The form is rather unlike the spade-shaped objects from the Southern Atlantic Coast and lower Mississippi Valley. Waterloo County, Ontario.

Fig. 453.

S. 1-2.

STONE PIPES.

Of stone pipes we have many forms. The material is usually a comparatively soft stone, such as soapstone or sandstone. In many cases but plain bowls were attempted, with or without stems, while in others the specimens are carefully worked and ornamented with elaborate designs. In Oxford and Waterloo Counties (Neutral Indians) we find but very few stone pipes, and most of these are plain and unornamented. A notable exception to this rule, however, is the "Thunder-bird Pipe," found by W. J. Wintenberg in the North of Oxford, and now in the Provincial Museum. A good description of it, together with cuts, is given in the Ont. Arch. Report of 1898.

Farther east, however, and very occasionally around here also, highly ornamented specimens are found. In the Provincial Museum are several "disk" pipes, a peculiar and rare form. Then there are a very large number with human and animals' heads carved on them with more or less accuracy. Stone pipes were usually made for use with a wooden stem, but quite occasionally the bowl and stem are combined. In the stemless specimens a hole is usually bored through for suspension.

The New England, New York, Pennsylvania and Eastern Canada pipes are more or less alike. Many of Prof. Berlin's figures will stand for our forms.

Mr. H. P. Hamilton, of Two Rivers, has a very fine collection and clay, kindly sent many large photographs of St. Lawrence forms in flint, copper, stone, etc. His pipes (Fig. 457,) show all the forms not already illustrated in other sections of this book and collectors will do well to study them. These, together with what have already been presented in the book and with subsequent illustrations, ought to give the collectors a pretty good idea of most forms of pipes.

Some of these pipes are modern and others are ancient. Nos. 6, 14, 16, and 31 might be picked out at a glance as scarcely prehistoric. No. 8 is a catlinite, yet the form is not necessarily modern. Nos. 1, 2, 3, 20, 23 and 25 are fair representatives of small prehistoric pipes.



Fig. 454. S. 1-3.

Four pipes from Mr. J. T. Reeder's collection, Calumet, Mich. We are indebted to Mr. Reeder for making illustrations of several of his best specimens.

A very fine effigy pipe found in southern Mich. This must have been carried north as effigy pipes are not frequently found of this form. St. Lawrence effigies are quite different as will be seen by inspecting Figs. 454, 457

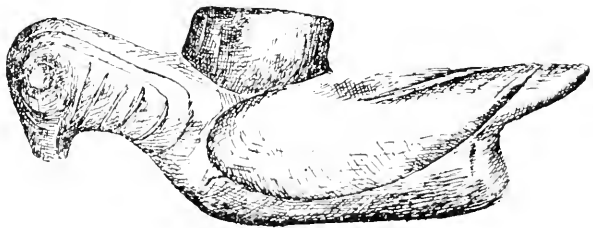


Fig. 455. S. 1-3.

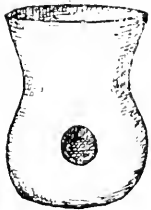


Fig. 456. S 1-1.

One of the smallest stone (steatite) pipes found in Ontario is shown here. The vase pipes vary in detail; some have spare mouths and others oval transverse sections, while others have 2 stem holes on opposite sides of the bowl.



Fig. 457. S. 2-7. Wisconsin, Michigan, Minnesota and Oregon Pipes.

The tubular pipes are from Oregon; the others from Wisconsin and the North.

- | | |
|--|-------------------------------|
| No. 1.—Wisconsin. Stone, with short platform form. | No. 16.—Minnesota. Catlinite. |
| No. 2.—“ | No. 17.—Oregon. Tube. |
| No. 3.—“ } Clay. Found on same | No. 18.—Wisconsin. |
| farm. Rare in Wisconsin. Both | No. 19.—“ |
| of these are of the trumpet form. | No. 20.—“ |
| No. 4.—Disk, Catlinite, Wisconsin. | No. 21.—“ |
| No. 5.—“ “ “ | No. 22.—Tube. Oregon. |
| No. 6.—Minnesota. Catlinite. | No. 23.—Michigan. |
| No. 7.—Wisconsin. “ | No. 24.—Wisconsin. |
| No. 8.—“ “ | No. 25.—Tube. Oregon. |
| No. 9.—Tube. Oregon. | No. 26.—Wisconsin. |
| No. 10.—Michigan. | No. 27.—Oregon. |
| No. 11.—Wisconsin. | No. 28.—“ |
| No. 12.—“ | No. 29.—Wisconsin. |
| No. 13.—Michigan. | No. 30.—“ |
| No. 14.—Wisconsin. Catlinite. | No. 31.—“ Catlinite. |
| No. 15.—“ Broken, platform type. | No. 32.—Oregon. |
| | No. 33.—“ |

In portions of Canada human faced clay pipes are not rare and occur more frequently than representations of animals. Sometimes on the square mounted pipe bowls, there will be a miniature mask at each corner, and occasionally this is reduced to the three conventional masks for eyes and mouth. The trumpet type is modified often by having a square or many sided top, with small various condentations and creenellations on the rim. Some of these plain cornet pipes have a very large, wide mouthpiece several inches across, and some have a beautiful gloss, nearly as fine as a polish, and vary in color from light reddish yellow to jet black, and are far more numerous than the whole gamut of ornamented pipes. See Ont. Arch. Reports, and Beauchamp's Bulletin on New York earthenware.

The clay pipes of Mr. Wilkinson's region are not effigies. He has found or seen hundreds of fragments of pipes and also some comparatively perfect specimens but they are all plain with the exception of a few ornamental lines around the top of the bowl, and perhaps also around the stem.

AXES, CELTS AND GOUGES.

In Ontario we have none of the elaborate grooved axes of Illinois and Ohio, but occasionally we find one with a rough groove running all the way around, and then again with only notches on the edges.

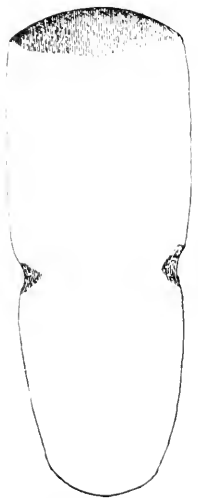


Fig. 458 is an immense notched axe from Parry Sound district. It is 11 inches long, $3\frac{1}{4}$ inches wide at the cutting edge and weighs a little over 5 lbs. Mr. Wilkinson also has a plain axe, about the same size and weight from Parry Sound.

Fig. 458. S. 1-5.

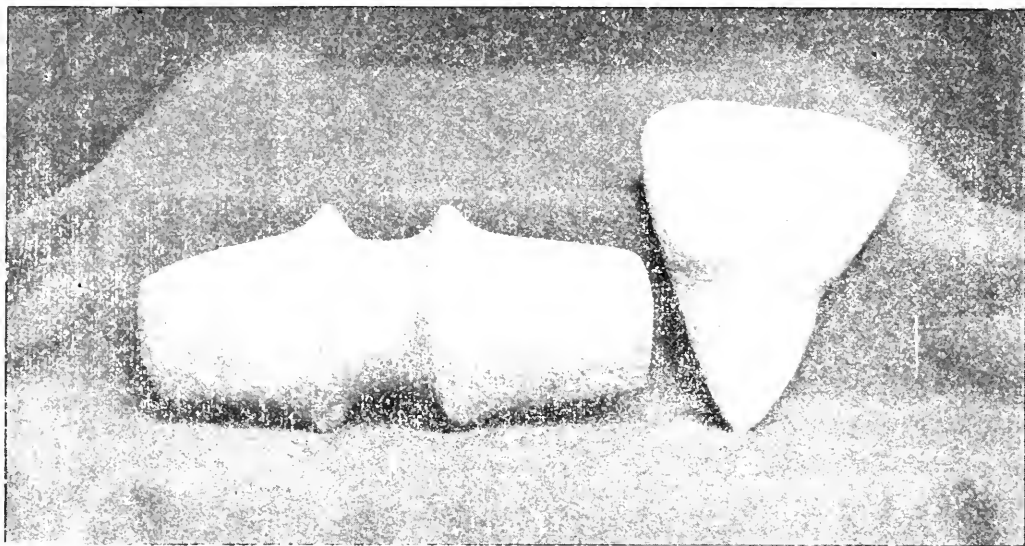


Fig. 459. S. 1-3.

A double-bitted grooved axe; Mich. Collection of the Rev. James Savage, Detroit, to whom we are indebted for illustrations of some specimens. The object to the right is a roughly made axe with very broad blade.

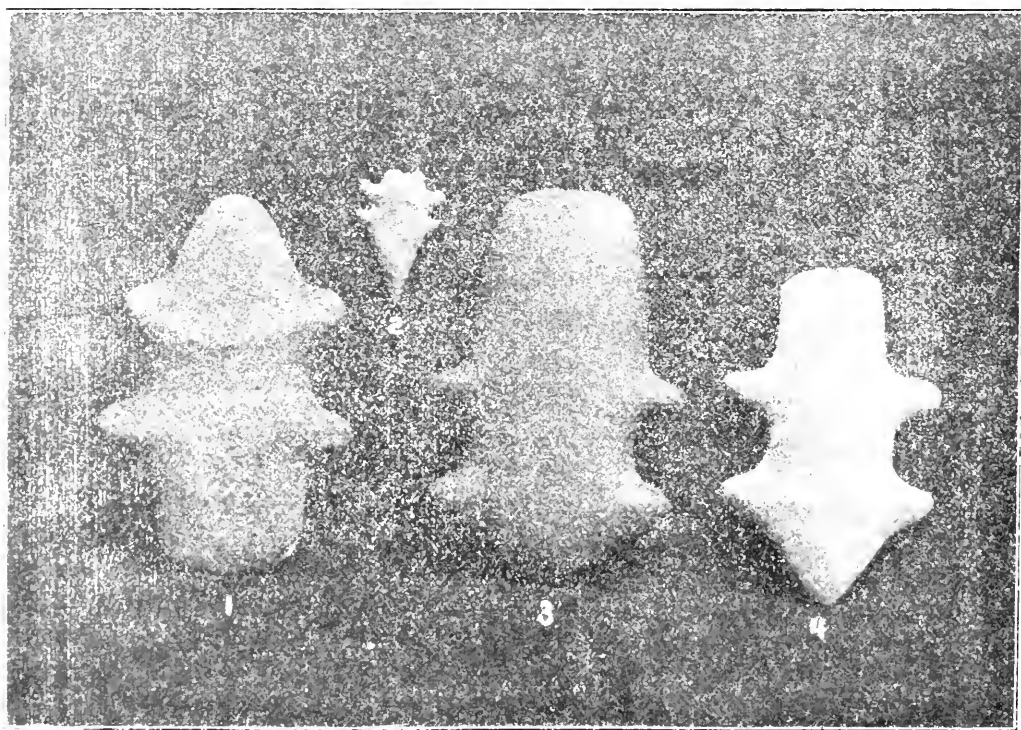


Fig. 460. S. 1-4. Michigan and Wisconsin.

Strange Axes.

These axes are not common in the St. Lawrence, and their distribution is mostly confined to Wisconsin and Michigan. They present a study in themselves, being of peculiar shape. The bits, or blades, are short, and the grooves abnormally broad and deep. We have never seen an axe with more prominent ridges—ending in projections on each side—than No. 4. The Rev. James Savage's collection, Detroit.

The striated axes of Wisconsin-Michigan are being studied by Mr. Chas. E. Brown. At present we cannot say why these peculiar striae were cut along the axe. They certainly did not add to the utility of the axe, and if they have a ceremonial significance, what is it?

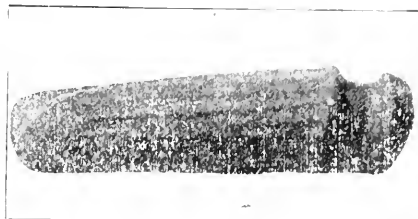


Fig 461. S. 1-4.
Found in Wisconsin.



Fig. 462.
S. 1-7.

Common Michigan axe. Collection of Mr. J. G. Reeder, Calumet. Like all axes illustrated it is of granite. Groove extends entirely around as in most St. Lawrence specimens.

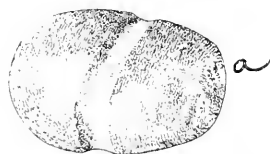


Fig. 463. S 19.

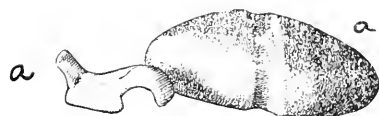


Fig. 464. S. 1-9.

In these figures are two stone mauls, or hammers from the ancient copper mines of Lake Superior. (A bird-stone ceremonial, by error of the engraver, is placed along side of one of these). Fig. 463 is short and heavy; Fig. 464 long and slender. The former has been much used, and the latter is a comparatively "new" hammer—that is, has not seen service. Quarry hammers from the copper mines are much better specimens than the flint or steatite hammers of the South and East. Mr. Reeder has made quite a collection of them, and both figures are from his cabinet. Many ungrooved hammers, of sizes ranging from an egg to a foot in diameter, were also used in the mines.

COPPER OBJECTS.

As the South is famous for pottery, so is the St. Lawrence renowned for its copper. The ore ledges of the St. Lawrence region contained surface veins of almost pure copper. Hundreds of pits were sunk and mining operations carried on in no insignificant manner. The metal from Lake Superior reached Maine on the east, Kansas to the west, and Florida to the south.* It was more extensively used than mica, galena, or other foreign substances. Sea shells may be expected but even in them the traffic was, according to our own observations, less extensive.

The authorities are many, but quotations from two must suffice.

"Copper, too, in various shapes, was in high favor among them, as aside from its use as ornament and as a mark of authority, it had among certain tribes a sort of religious character or significance. In Wisconsin, for instance, in the heart of the copper-bearing region, it was not unusual to find pieces of fifteen or twenty pounds weight, that had been preserved in families, from time immemorial, and were venerated as domestic gods; whilst the smaller pieces were looked upon as the possessions of the divinities that lived under the earth and as the playthings of the children."[†]

An article of merit by Mr. R. L. Packard was published in the *American Antiquarian* in March, '93. Mr. Packard had investigated pits and says:

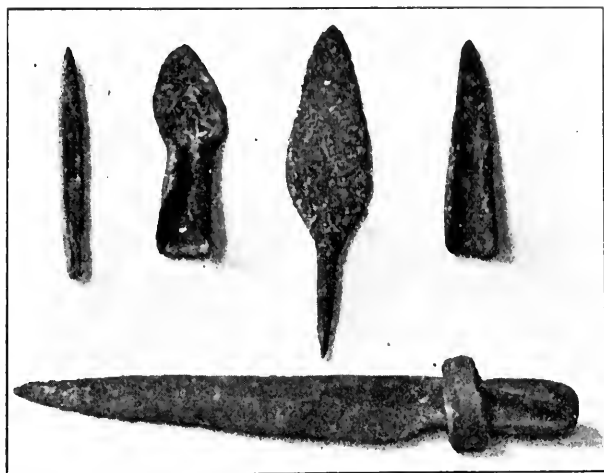
"At one point I found a handsome specimen of quartz and copper laid up carefully in a niche. It weighed several pounds * * * As in other cases, we had proof that the ancient miner did not sink any shafts and do real mining. He was only a surface gleaner.' Of the ancient workings on Isle Royale, on the north shore of the lake, which were very extensive and have been described as extending twenty feet and more in the solid rock, Mr. Forster says: 'As I understand it, these extensive works were upon a high outcrop, promising natural drainage. And I should infer from what I heard from Mr. A. C. Davis, the agent, and others who opened the Mining mine that the ancient workings were among disturbed shattered rocks, among which were found much mass copper and barrel work. The ancients were after these pieces of copper. Mr. Davis found many considerable masses, handled and beaten by the ancient men, which were too large for them to carry away.'"

* "As to copper from the Mounds of the St. John's River."

Clarence B. Moore.

Journal of Academy of Natural Sciences of Philadelphia, Vol. X, 94.

[†]*Dress and Ornaments of Certain American Indians* By Lucien Carr. *Proceedings of the American Antiquarian Society*, April, 1897. Page 66. *Jesuit Relations*, 1657, p. 8; and 1670, p. 84.



Copper drill, spears, and
knife-blade.

Fig. 465. S. 1-2. Michigan-Wisconsin.

Both are Figs. of speci-
mens in Mr. J. T. Reeder's
Collection, Calumet, Mich.

Copper knife, spear, and
axe.

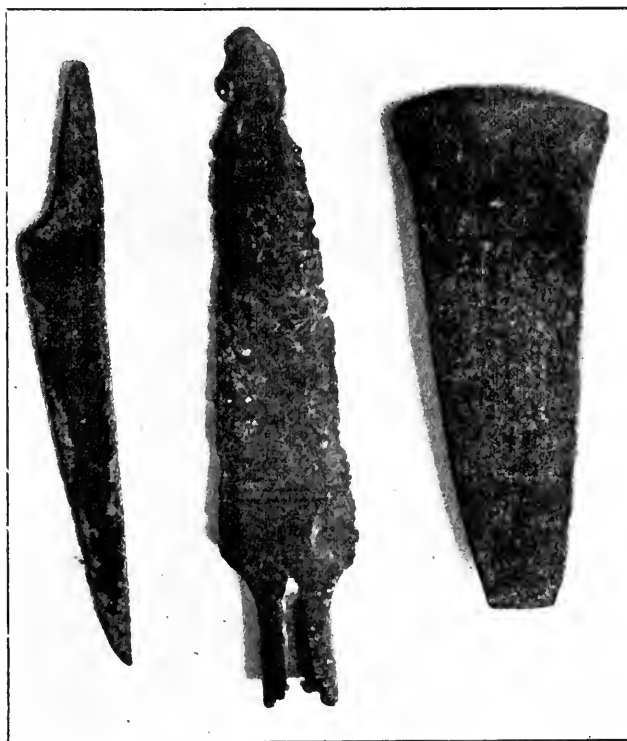


Fig. 466. S. 2-3.

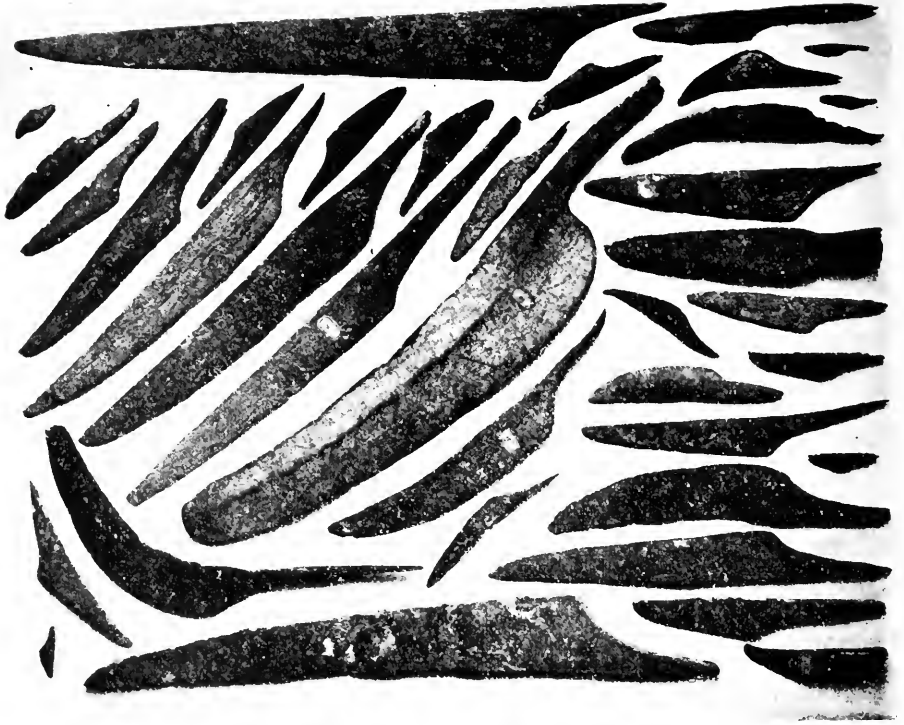


Fig. 467.

Copper knives from Wisconsin. H. P. Hamilton collection. S. 2-7. This is a very fine group of some 36 copper knives.

It is unfortunate that all of Mr. Hamilton's "coppers" cannot be shown in this book. He has one of the best collections ever made.

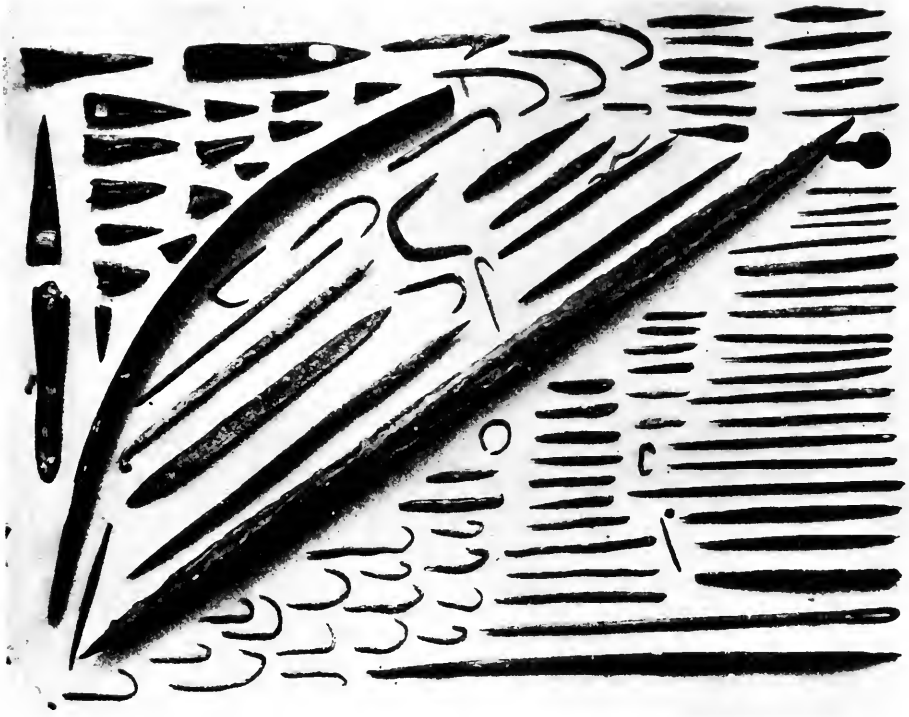


Fig. 468. S. 2-7.

Copper Fish-hooks, Needles, or Hair Ornaments, etc. H. P. Hamilton Collection.
Two Rivers, Wis.

Mr. Hamilton says: "No institution has a set of these small coppers, or any private collector that I know of. They are found almost exclusively at Two Rivers and vicinity, on the lake shore in the drifting sand, on old village sites. For six miles north of Two Rivers, along the lake shore, the land is sandy and unfit for agriculture, consequently has never been cleared. The whole tract is an old village site, and there must still be thousands of these small coppers in this tract."



Fig. 469. S. 2-5.

H. P. Hamilton collection, Two Rivers, Wisconsin.

Nos. 1 to 7.—Cache of copper implements found at Oconto, Wisconsin. No. 1 is the only specimen of the kind known in copper with one exception and this was also found on the same spot.

Nos. 2 and 3—Are small copper arrows

No. 4—Largest I have any record of.

No. 5—Unusual form of knife or sword.

No. 6—Chisel with battered head.

No. 7—Leaf shaped blade.

Nos. 8, 10 and 12—Copper spuds.

No. 9—Small unusual pointed spud or chisel.

No. 11—Winged chisel.



Fig. 470. S. 2-7.

Copper chisels from Wisconsin. H. P. Hamilton collection.

He says that the middle celt is bevelled evenly from a central ridge in both directions and considers it the finest specimen he has ever seen. It is $14\frac{5}{8}$ inches long and weighs $5\frac{3}{4}$ pounds. The great copper axe found in the Hopewell mound was 22 inches long by about 6 inches wide and weighed nearly 38 pounds.



Fig. 471. S. 1-4. Copper Crescents, Beads and Ornaments.

Several of these appear to be hair-pins or head ornaments. We do not know the use of most of them as we have never seen anything exactly of this form. Copper beads such as are shown in the strand are found generally throughout the United States and are not rare. The crescents are occasionally found. The other five objects are quite unique.

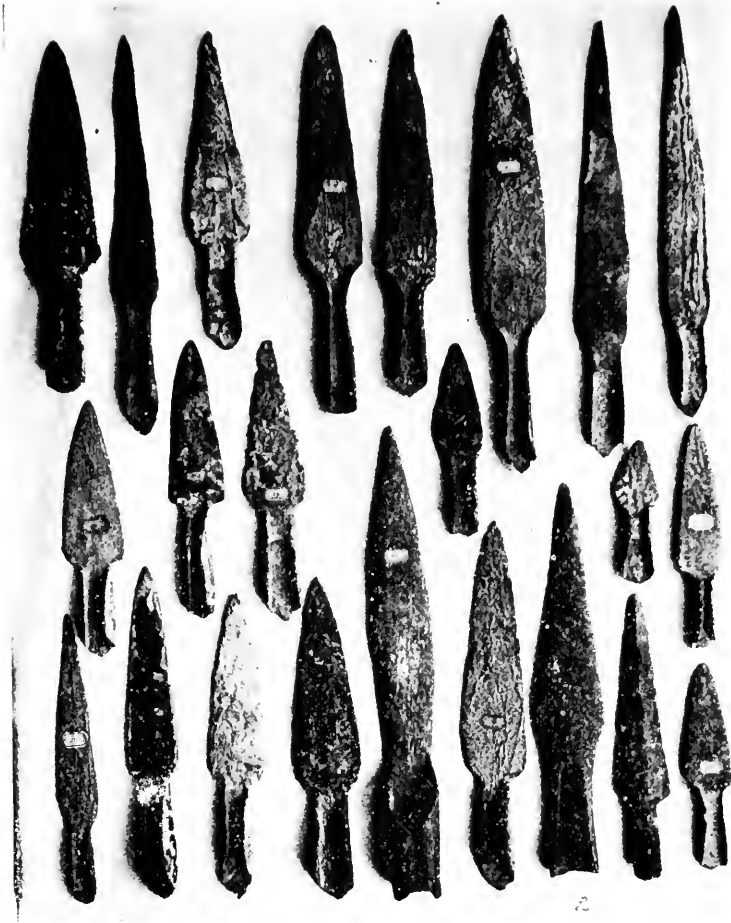


Fig. 472. S. 1-4.

Wisconsin. H. P. Hamilton collection.

Most of these are "socket" spears with ribbed backs. The central spear of battered copper and No. 2 are unusual, having rolled sockets. They are quite massive. Mr. Hamilton says that No. 2 is the rarest form of copper spear. Only three or four have been found, just enough to establish the type. No. 2 has parallel lines along both sides of the blade and is very regular and also has peculiar corrugations.



Fig. 473. S. 1-4.

Copper objects, clay and stone pipes, etc., from Mr. John T. Reeder's collection.
Calumet, Mich.

Lapham's Antiquities of Wisconsin should be consulted.

Archæological Reports of the Minister of Education, (Ontario), by David Boyle, '98, Pottery, pp. 43-4. Cutting Tools, '98, p. 51. Tablets, '96-7, pp. 56-7. Pipes, '96-7, pp. 51-2. Burial customs of the Hurons; Bureau Ethnology Report, '83-4, p. 111. The Germ of Shoreland Pottery; Prof. F. H. Cushing, Report of Congress of Anthropology, '93, p. 220.

Mr. G. J. Chadd of Trenton, Ont., has sent photographs of objects in his own collection and that of Mrs. R. H. Spencer. In these two exhibits are many fine bone implements. Bone and shell objects are quite numerous in the St Lawrence Basin. Mr. Chadd and Mrs. Spencer have a large assortment of pipes. Some long, slender chisels are worthy of notice as they look like southern forms.

Mr. L. S. Drew of Lamont, Wis., and the Rev. L. N. St. Onge send us numerous drawings and photographs of typical specimens. These, and other illustrations, but confirm the opinion that the figures presented in this section are typical St. Lawrence specimens.

The Rev. Mr. St. Onge says: "I have seldom seen the Indians wear natural formations as ornaments unless they were of a striking nature."*

We omitted showing illustrations of the bone objects. They differ from those found South and East, but the figures of awls, harpoons, beads, etc., shown elsewhere in this volume, will do very well for our types.

Pottery discs are found. These are made from fragments of pottery ground smooth on the edges and occasionally perforated in the center. Large numbers of these appear in ash-beds on some sites, where gaming was perhaps carried on to a large extent in the long winter nights. These may have been the wigwams more frequented by the men of the village for companionship and social purposes. These discs are sometimes referred to as "gambling" discs, counters, or markers, and vary in size up to several inches in diameter. Some have the pottery markings on one side, and others are just chipped from the sherd and not ground smooth on the edges. Another fact very often noticed is that a small perforation is started on top generally, and it has been remarked that this may have been done in order to distinguish that particular side for some purpose of the game, as in coloring one side of the plum stones in the "plum-stone" games in vogue amongst the Huron people. (Stewart Culin in chess and playing cards, published by Smithsonian Institution in 1898, refers to similar discs being used amongst the Zuni Indians in playing a game called "Stone Warriors," p. 877).

*St. Hyacinthe, Quebec, Canada, April 19th, 1900.

SECTION XI.

THE OHIO VALLEY.

Much more is known concerning the archæology of the Ohio Valley than that of any other region of the United States. The first settlers at Marietta were New England and Virginia people of more or less education. Their home letters called attention to the great earthworks at the mouth of the Muskingum. In 1820 the American Antiquarian Society devoted most of its first volume to the researches of Caleb Atwater, who resided at Circleville, Ohio, and had spent many years in personal investigation of the ancient remains of Ohio, Kentucky and adjacent territory.

In 1847 the Smithsonian Institution published Squier and Davis's *Ancient Monuments of the Mississippi Valley*. Strange as it may seem, modern writers, as a whole, have improved but little upon the magnificent volume prepared for the government by these scholarly gentlemen. That is, the book presents a condensation of the subject in such a masterly manner; the explorations were so extensive, and Squier and Davis's conclusions so conservative and trustworthy, that the book remains an archæological classic, despite the many assaults made upon it. The exploration of a dozen groups of tumuli but bear out in detail Squier and Davis's facts and observations. In truth, these two men builded better than they knew. Every student of Ohio Valley Archæology should read their volume.

The labors of these gentlemen brought the mounds of the state of Ohio to the attention of persons both here and abroad. As a natural result museums, institutions and private individuals have worked in the Ohio field almost continuously for fifty years and the story of Ohio archæology is written. There are small groups and single mounds to be inspected. Caches of implements are found, village cemeteries and village sites are now and then discovered, but the exploration of such sites as Turner, Hopewell, Fort Ancient, Madisonville, etc., are matters of the past.

It is not so much that Ohio is a richer field than Missouri, Tennessee, Illinois or Arizona, but that it is well nigh exhausted. All the museum men of field experience are conducting their explorations in other regions. The amount of work done in Ohio put upon Illinois, Kentucky, Tennessee or Missouri remains would yield astonishing results. Dr. Wilson's famous truism: "These things are found *not* in proportion to their numbers but according to men's searchings" has held good in Ohio. There are just as many objects—although, perhaps, fewer mounds—elsewhere in the Ohio Valley.

If asked to outline a course of reading for students I would answer that every work of importance, every society publication, every museum report, not confined to the Southwest or the Pacific Coast has something to say regarding the Ohio Valley. A complete list would fill many pages. I can only refer readers to a few of the standard works:

Reports of the Ohio State Archæological and Historical Society.

Peabody Museum reports.

Field Columbian Museum reports.

Smithsonian and Bureau of Ethnology reports.

Cincinnati Society of Natural History and Western Reserve Historical Society reports.

Introduction to the Study of American Archæology, Cyrus Thomas.

The Mound Builders, J. P. McLean.

Stone Art and Notes on Ohio Archæology, Gerard Fowke.

Report on Ohio Archæology (in press), Gerard Fowke.

Prehistoric America, Marquis de Nadaillac.

Madisonville Explorations, Dr. C. L. Metz.

Files of the American Antiquarian.

American Anthropologist and American Naturalist.

Popular Science Monthly, Popular Science and Science.

Primitive Man in Ohio, and Fort Ancient ; Moorehead.

In the Smithsonian reports and those of the Bureau of Ethnology and Peabody Museum are found valuable papers by the well known authorities: Holmes Putnam, Wilson, Smith, Read, Thomas, Fowke, Snyder and others.

The Archæologist of '93-96 ; the American Archæologist of '97-98 contain several score of articles treating of Ohio Valley discoveries, types of specimens, etc.

The perusal of one-tenth of this literature will give readers a comprehensive idea of Ohio Valley Archæology.

The Ohio Valley section can be little more than an illustrated catalogue. The other sections of the book have occupied more space than was expected, but they have also covered the common forms and types and I shall endeavor to omit such descriptions as would duplicate what has already been said—and better said than I could say it—about the other regions.

PIPES.

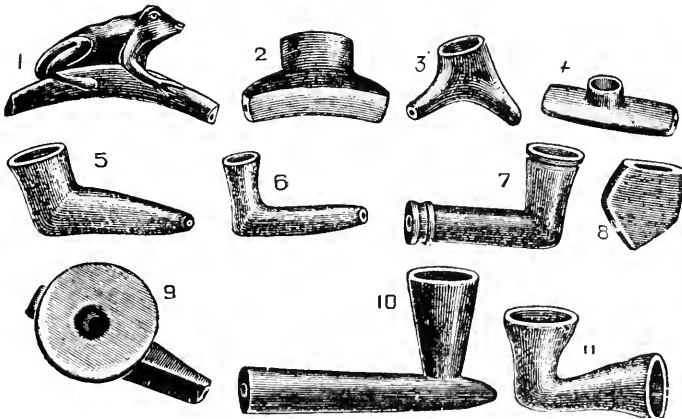


Fig. 474. S. 14.

Fig. 474 presents a group of characteristic pipes. No. 1, an effigy with curved base. This is of the same type as found by Squier and Davis in such large numbers at Mound City, Ross County, Ohio. No. 2 and No. 4, monitor or platform pipes, common throughout the Ohio Valley. No. 3, a pipe with curved base. The specimen is rarely found save in Illinois, Kentucky, and West Virginia, and it is not common there. No. 5 and No. 6 ordinary L-shaped pipes having stems exhibiting various angles. No. 7 and No. 10 are manifestly modern. No. 9 is the disk pipe referred to by Mr. McGuire as modern. I am of the opinion that some of these disk pipes may be ancient, but doubtless many of them are modern. No. 11 is often found in Illinois and West Virginia and in the South.

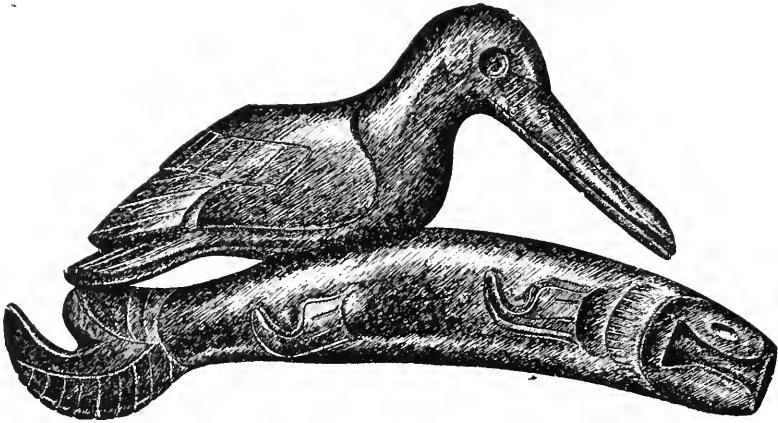


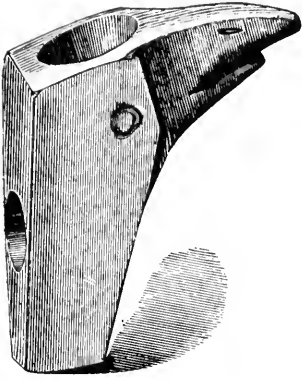
Fig. 475. S. 1-1.

No. 475 represents one of the finest effigies from the Ohio Valley. It was found in the altar of the Effigy Mound of the Hopewell group by the World's Columbian Exposition survey in 1891. A full account of the finding of copper, obsidian, mica, meteoric iron, pearl beads, etc., was published as a serial in the *American Archaeologist* of '97-98. This pipe represents a wood-duck on the back of a fish. Material, graphite slate. It presents as high a type of art as the Mound-builders attained.



S. 2-3.

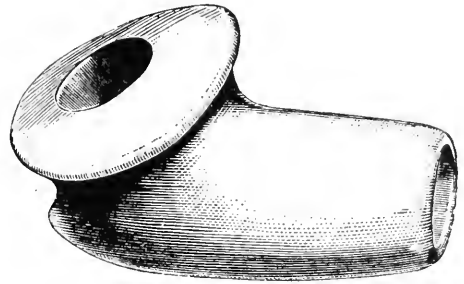
Fig. 476, a group of peculiar cylinder or tubular pipes from an ancient burial-ground near Willoughby, Ohio, on the shores of Lake Erie. These pipes are found in the St. Lawrence Basin more than in the Ohio Valley, and doubtless it would have been more proper to have introduced them in that section. The mask to the right is interesting, although it may be modern as the chin is ornamented with a cross.



S. 1-1.

Fig. 477 is a peculiar stone pipe found in the prehistoric cemetery at Madisonville, Ohio.

Fig. 478. A common Ohio Valley form. Material, sandstone.



S. 1-1.



S. 1 2.

Fig. 479. From the collection of Dr. Cavey, West Alexandria, Ohio. Very singular specimen of sandstone. Quite rude. Possibly an unfinished pipe. While there are some evidences of use, yet it is possible that the owner may have intended to complete it at some future date.

Fig. 480. A pot-shaped pipe of stone from Illinois.



S. 1-1.



S. 1-3.

Fig. 481. An effigy pipe in the possession of Thos. H. Tipton, Williamsport, Ohio. The cut, unfortunately, does the object an injustice. The sculpture is of an animal, perhaps a bear. Found in Pickaway Co.

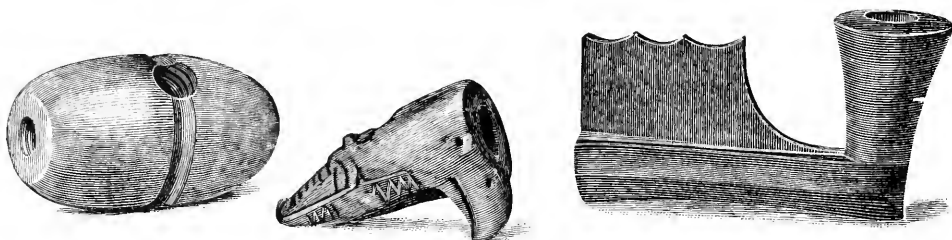


Fig 482. S. 1-2.

Fig. 482 shows three pipes from the collection of Mr. H. S. Hurlbutt, Libertyville, Ill. The one to the right is doubtless a modern form as it has that appearance. The central one is one of the small effigies common in Canada and the St. Lawrence region, but not infrequently found in the Ohio Valley. The one to the left is an ordinary pipe, egg shaped. Its peculiarity lies in this fact, that it is grooved around the center.

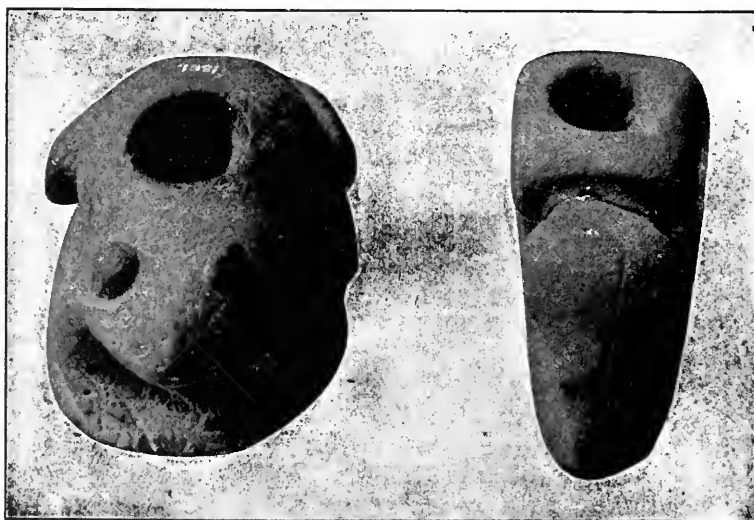
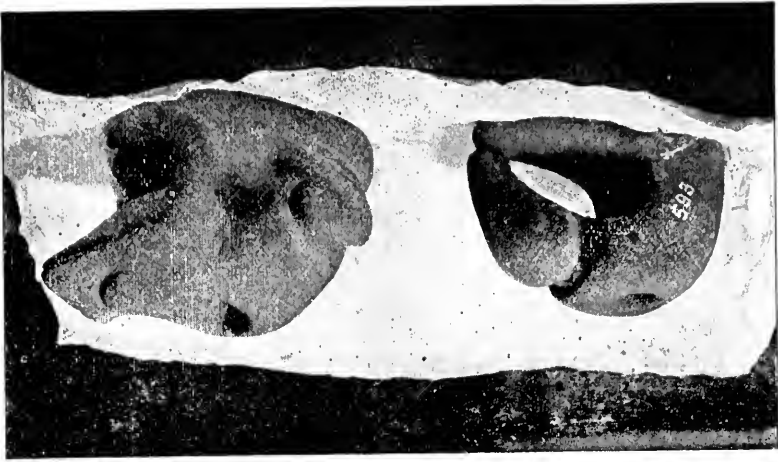


Fig. 483. S. 2-7.

Fig. 484. S. 1-2.

Fig. 483 is an effigy pipe of sandstone found at Waynesville, Ohio. It portrays a frog and is well made. Original weighs five pounds. Many fine specimens have been taken from graves in gravel knolls. I have always thought that gravel knolls or glacial kame burials represented a different tribe from those of the mounds.

Fig. 484 is a bird pipe from Ross County, Ohio. Material, fine grained sandstone. At first glance this pipe has the appearance of a mastodon.



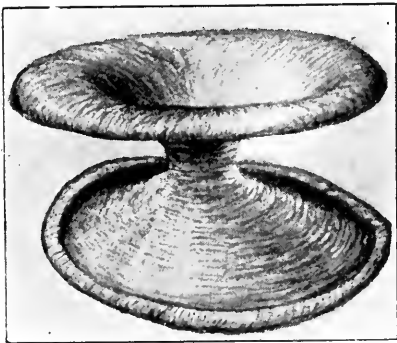
S. about 1-3.

Fig. 485 Side view of the bird and frog pipes, Moorehead Collection, Ohio State University Museum. They are shown smaller in this than in the front views.

I am indebted to the Ohio State Archaeological and Historical Society for the loan of these and other cuts.

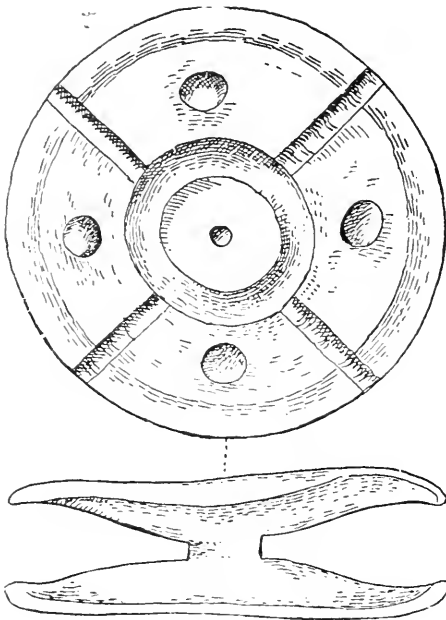
COPPER AND MICA OBJECTS.

These are frequently found in the Ohio Valley, and as the plates, axes, bracelets, etc., have been illustrated in Fig. 61 and in the St. Lawrence section, I will only present figures of two forms of copper ear ornaments or "ceremonial buttons."



S. 1-1.

Fig. 486 was found in Illinois by Dr. J. F. Snyder, and described by him in the *American Archaeologist*. It is a plain ear or hand ornament, very common throughout the Ohio and Upper Mississippi Valleys. It is almost exclusively found in the mounds. Three or four thousand of them were taken out of the Hopewell mounds.



S. 1-1.

Fig. 487. This is an embossed ear ornament and shows repoussé work. Dr. Wilson has described it in *The Swastika, Prehistoric Art, etc.* Found in Effigy Mound, Hopewell group.

Sheet copper cut in various designs and sometimes ornamented with stamped patterns was considered modern by many archaeologists. Prof. Cushing, Mr. Moore, Prof. Putnam, Mr. Willoughby, etc., have contended, in various publications, that it is pre-Columbian. Mr. Moore had numerous analyses made and proved that there is a difference between commercial copper of two or three hundred years ago and prehistoric copper. His conclusions have been generally accepted. The mound copper is aboriginal and not of white mans' make.

INSCRIBED STONES.



These two are from an ancient village site on Paint Creek, Ross County, near Bourneville, Ohio, and have typical Indian pictographs upon them. Mr. A. B. Coover, of Roxabell, O., found them. It will be observed that the character of the inscriptions is entirely different

Fig. 488. S. 1-1.

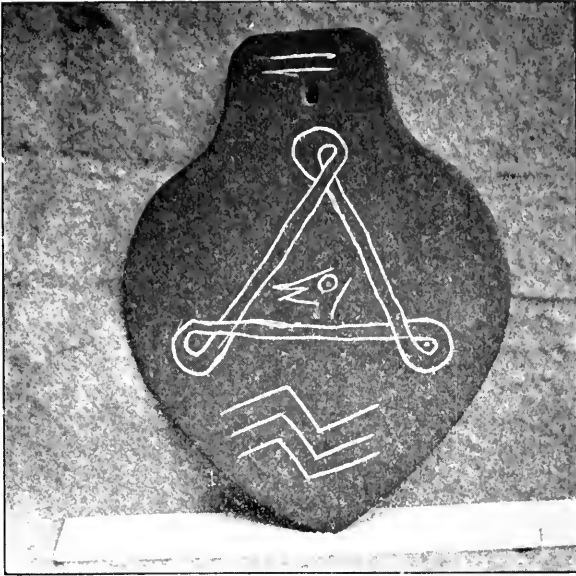


Fig. 489. S. 1-1.

from that found upon the so called "genuine inscribed tablets." In fact, no genuine hieroglyphics have been found north of Mexico, although some very strange records and figures almost approaching an alphabetical stage have been discovered on stones, hides, bark, etc., on the Plains and elsewhere.

PLUMMETS.

Plummets or pendants are very common throughout this section. But such forms as are shown are rather rare.

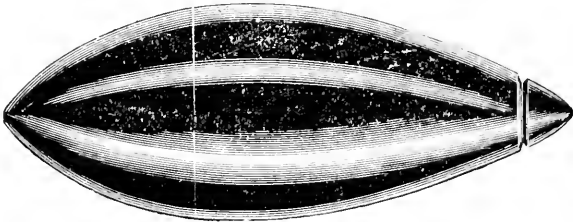


Fig. 490. S. 1-1.

Of hematite and unusually fine. It was found in Southern Illinois.

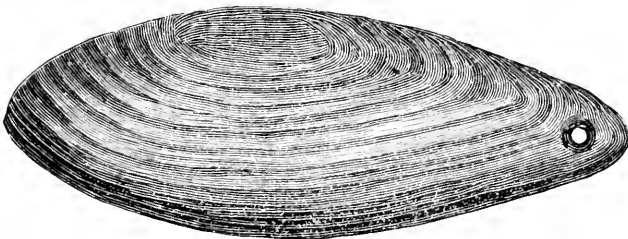


Fig. 491. S. 1-1.

Fig. 491 is perforated, a rather rare feature in plummets. It was found south of Dayton, Ohio. The Binkley Collection.

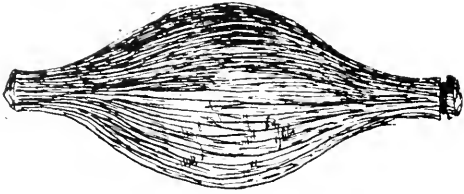


Fig. 492. S. 1-1.

A very fine pendant or charm stone, as Dr. Yates calls them, from the Scioto Valley. It is made of granite. This kind is found in mounds.

Dr. Yates has presented illustrations of several common pendants in his section. Figs. 380-1 might well stand for Illinois and Ohio types.

“TOOL SHARPENERS” OF SANDSTONE.



Fig. 493. S. 1-2.

The three specimens illustrated in Fig. 493 are from the collection of Mr. Chas. Wertz, Portsmouth, Ohio. The use of these tools has been referred to in several places in this book. The lower specimen in the figure is quite remarkable in that it shows long and continued use having many grooves on all sides.

BIRD STONES, ETC.

A great many interesting bird or saddle shaped stones are found in this section. I have covered the field in my Bulletin, *The Bird-stone Ceremony*, and need only call attention to one or two types here.

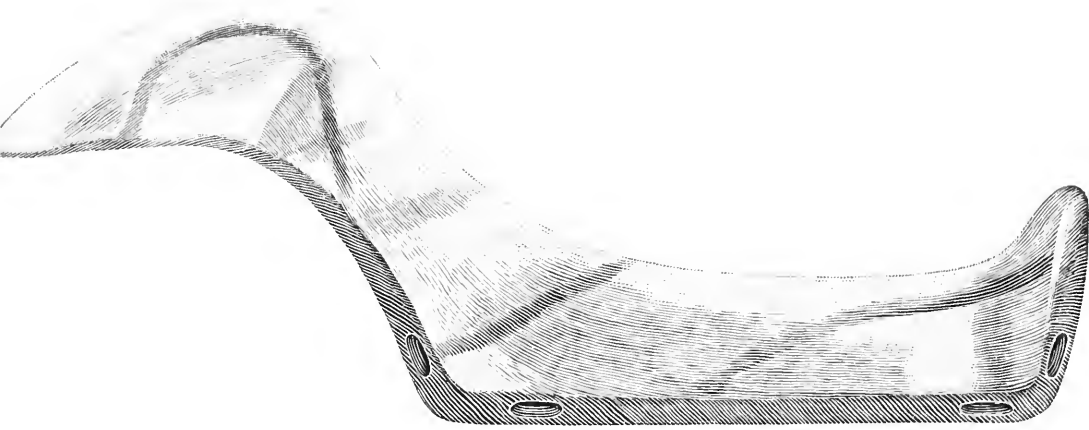


Fig. 494. S. 1-1.

This is the more common form. It is from northern Indiana, collection of Mr. Gruhlke. It is the plain saddle form without ear projections, and, so far as we know, was worn upon the head of women about to be married.

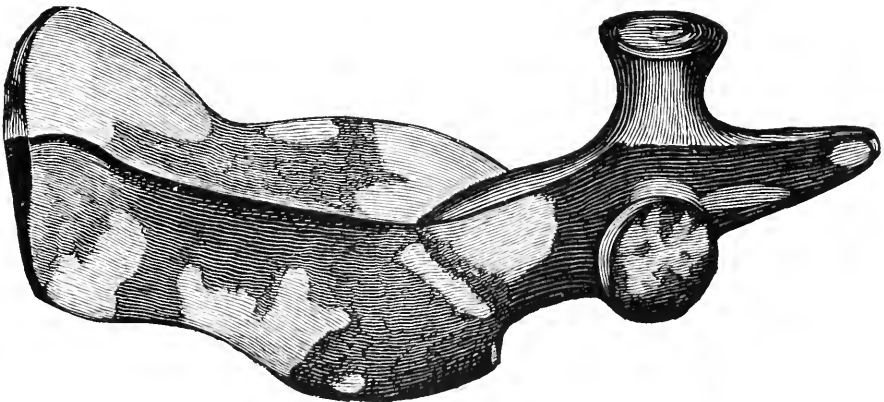


Fig. 495. S. 1-1.

Fig. 495 is from western New York, and presents a highly developed bird form. These effigies are very peculiar. The single ear-like projections on each side of the head make them appear less bird-like, yet the broad tail, the neck and the slender bill lead us to class them as bird stones.

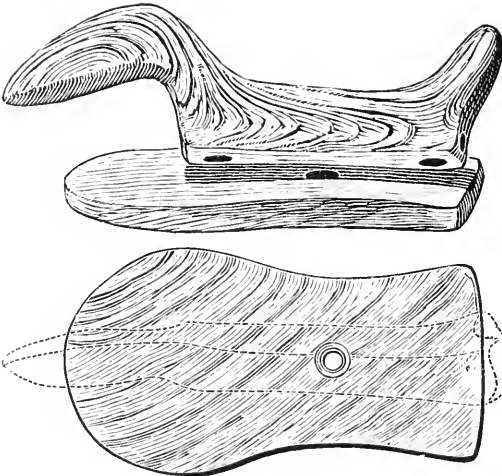


Fig. 496. S. 2 3.

Fig. 496 is taken from the late Prof. Cushing's proof-sheets of *The Calumet*, etc., shortly to be published by the Bureau of Ethnology. Cushing believed that many of the so-called ornaments or ceremonials were used as bases on which to mount small effigies.

I agree with some of the archæologists in that bird-stones, such as Fig. 495, were not worn by women but were tied by Shamans on bunches of arrows or other personal property to bring luck, success, etc.

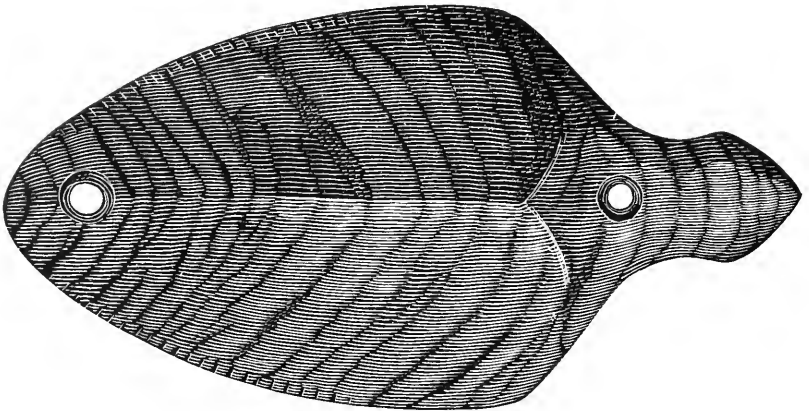


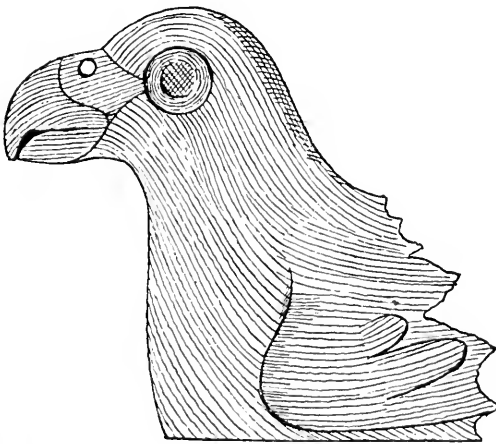
Fig. 497. S. 1-1.

An unknown effigy from northern Indiana. Gruhlke's collection. It is more turtle than bird-shaped.



Fig. 498. S. 1-1.

Fig. 498 presents a remarkable bird stone or effigy, to the right of which is an axe, and to the left a perforated ceremonial. This effigy has no body and is doubtless a connecting link between a general effigy type and the bird or saddle form proper.



A bird in bone. Found in the effigy mound of the Hopewell group.

Fig. 499. S. 1-1.

PESTLES.

These are very common throughout the Ohio Valley. The long roller form is not as often found as the bell-shaped. Fig. 68 (page 63) represents the more artistic form of pestles. Although found in Minnesota it will stand for the Ohio Valley type.

Some very fine bell-shaped pestles are polished and have a ring or knob at the top. I have seen as fine ones as are found in Alaska or British Columbia.

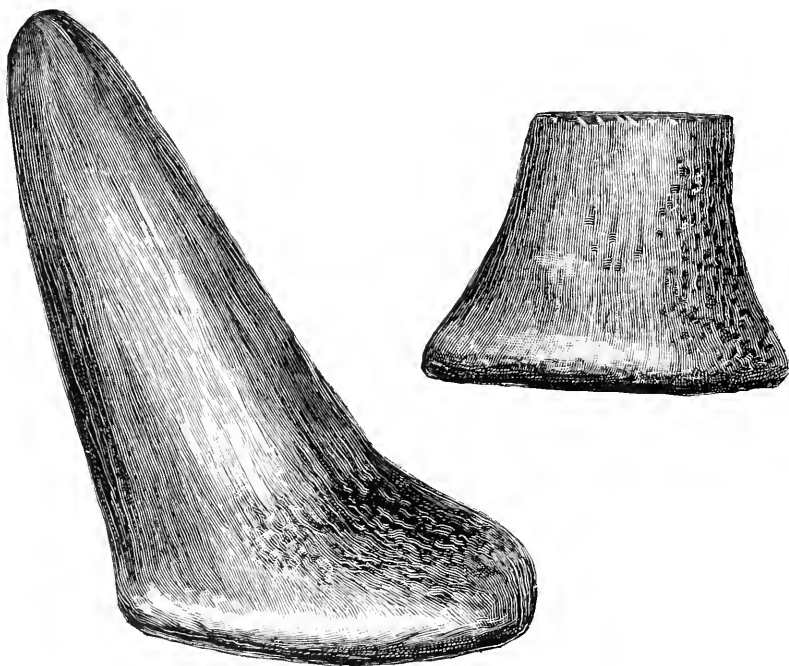


Fig. 500. S. 1-2.

Fig. 500 shows two interesting specimens, one of which is unusually short while the other is made from a sloping stone. Pestles like the large one are often found. They can be used more conveniently than the symmetrical forms. I have seen scores which had been so long in use that the side was worn away an inch or more. Pestles are of all shapes, sizes and materials. Sandstones predominate, but limestones, granites, etc., were used. S. H. Binkley's collection, Alexandersville, Ohio.

BONE AND SHELL OBJECTS.

These are quite common in mounds, graves, and upon the village sites. All the streams abounded with large unios, an important article of food here as elsewhere. The heavier shells were perforated and used as hoes. Sea shells and fresh water shells were commonly cut into disks, made into beads, etc.

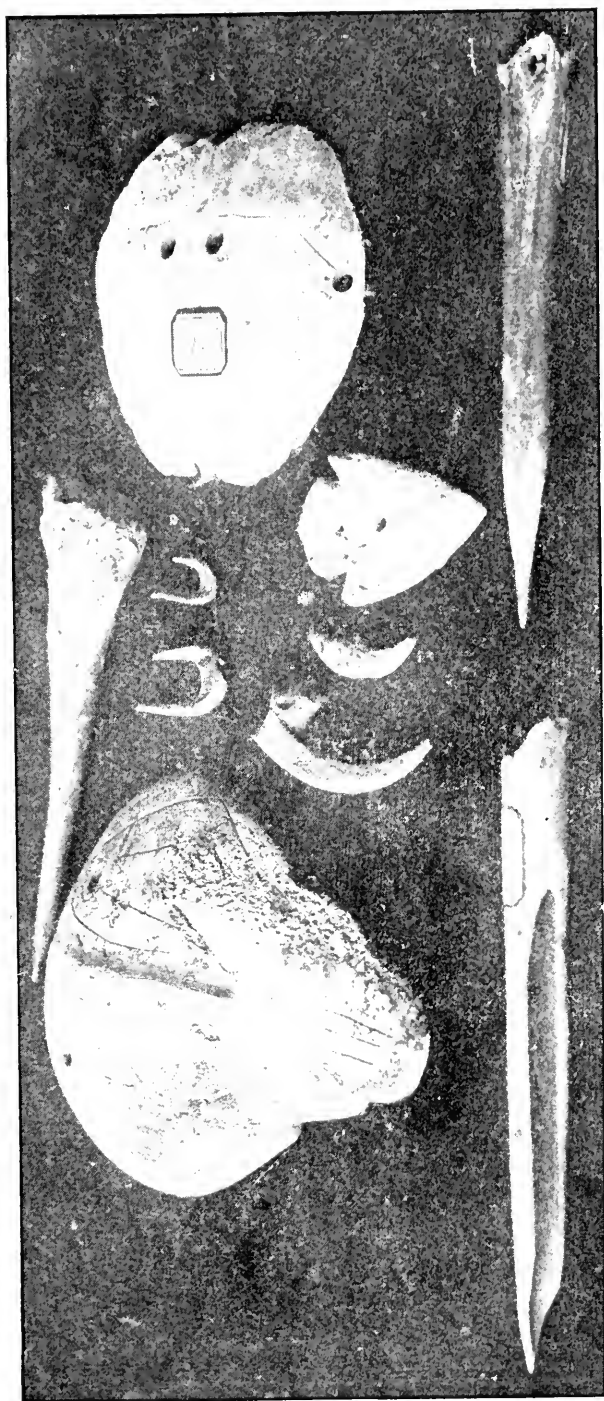


Fig. 501. S 1-2.

Fig. 501 presents three typical bone awls from village sites, two fish-hooks, arrow-head-shaped ornament of bone and two large shell ornaments. The shell ornament to the left is a rude imitation of a human face. Some carved shells are found, but they cannot compare with those of the Middle South.

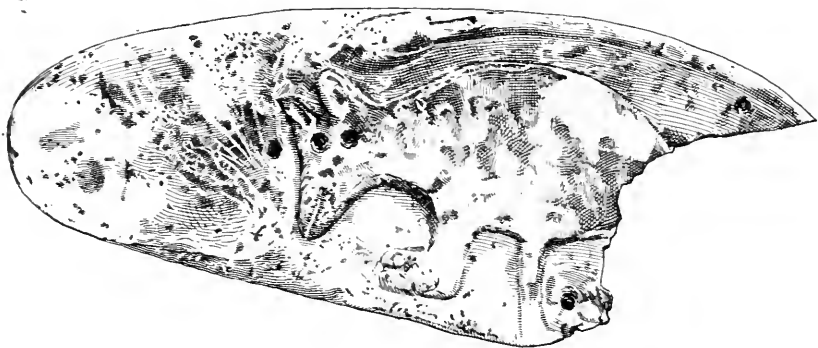


Fig. 502. S. 1-1.

Fig. 502 was found in a gravel pit alongside of a skeleton near Kenton, Ohio, and belongs to Dr. Jesse Snodgrass of that place. The carving represents a bear.

Fig. 503 is from the collection of James Pillars Lima, Ohio. It was found in a mound, Mercer Co., Ohio. There are three perforations. Both it and Fig. 502 are cut from large unio shells. Mr. John N. Hodgkin, of Richmond, Ind., writes that he found some fifteen or twenty shell ornaments like this one in a grave.



Fig. 503. S. 1-3.



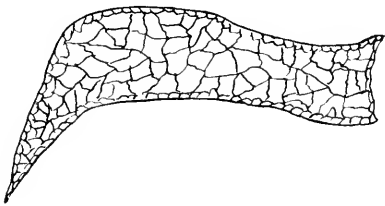
Fig. 504. S. 1-1. This is a shell hairpin. They are not found in Ohio or Indiana, but occasionally in Illinois and Kentucky.

FLINT IMPLEMENTS.

There is no end to the multitude of flint weapons and tools found in the Ohio valley. Famous Flint Ridge furnished material from the pits of its quarries for millions of points and knives. I have heard observers say that the great quarries of two or three localities abroad and of Illinois and Indian Territory are more extensive. I have never visited them. I cannot imagine how that the quarries of Flint Ridge are excelled either in the number of pits or the amount of work done there. There are 1,100 pits at Flint Ridge, covering a region some six or seven miles in length. The debris from the quarry working and chipping is so thick in places that there is more flint than earth, and I have heard a plow share jingle and ring as though one drew a piece of metal through a mass of coins. The majority of the specimens illustrated in all the reports treating of western New York, northern Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and southern Michigan are made of Flint Ridge stone.

Flint Ridge is worthy of a visit even if an archæologist has to travel 500 miles to get there.

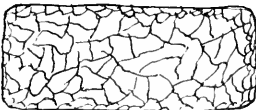
All of Dr. Wilson's classifications except the slender types of the Pacific Coast, and the peculiar "square-barbed" of Class D, the polished slate points and possibly Class E, are found in the Ohio Valley. Semi-lunar knives and one or two other subdivisions may not be found. I have seen one or two semi-lunar knives but not enough to say that they are present as a class. It is a sweeping assertion, but I think a true one. All the other forms of knives occur in great numbers.



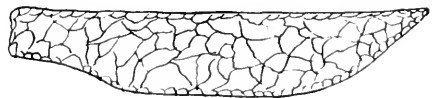
No. 1.



No. 3.



No. 2.



No. 4.

Fig. 505. S. 1-2.

Fig. 505 shows four of the rarest knives. No. 1 is a long sickle-like point almost like the Tennessee form, but inferior. No. 2 is squared at the corners like Dr. Steiner's specimens. No. 3 would pass for his razor-blade type, and No. 4 is a handled knife.



Fig. 506. S. 1-2.

Fig. 506 is a very interesting knife from Mr. J. A. Harris's collection, Stryker, Ohio, of clear Flint Ridge chalcedony. The top or head is rounded, but from the middle the edges are run straight to the point.

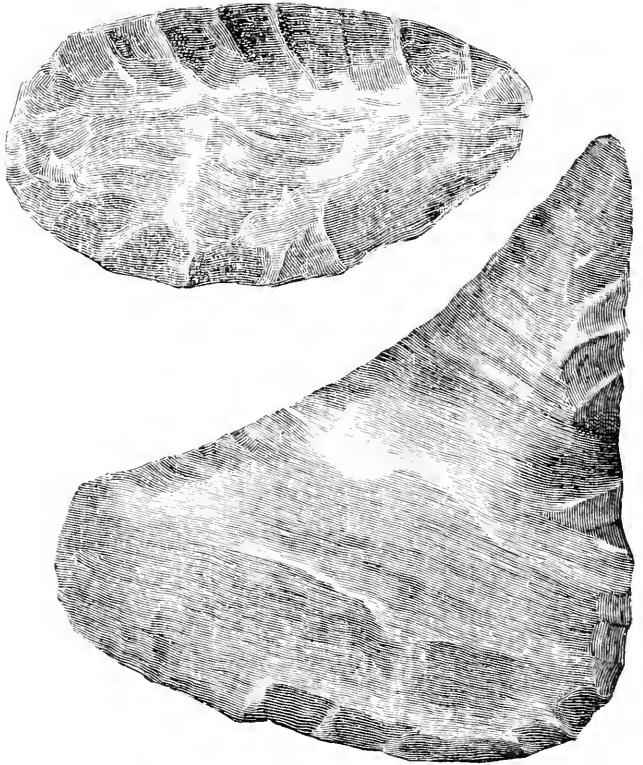


Fig. 507. S. 1-1.

The oval knife shown in Fig. 507 is a very common form. The lower specimen is more interesting. This knife appears to have been used for a long time, until it was considerably worn down. It was a very convenient tool and could be used as a scraper or as a cutting knife. Notched knives are frequently found, but never finer than Figs. 508-9. Binkley Collection, Montgomery County, Ohio.



Fig. 509. S. 1-2.

Figs. 508 and 509. These are both of obsidian, and were taken from the large altar of the Effigy Mound, Hopewell Group, Ross Co., Ohio.

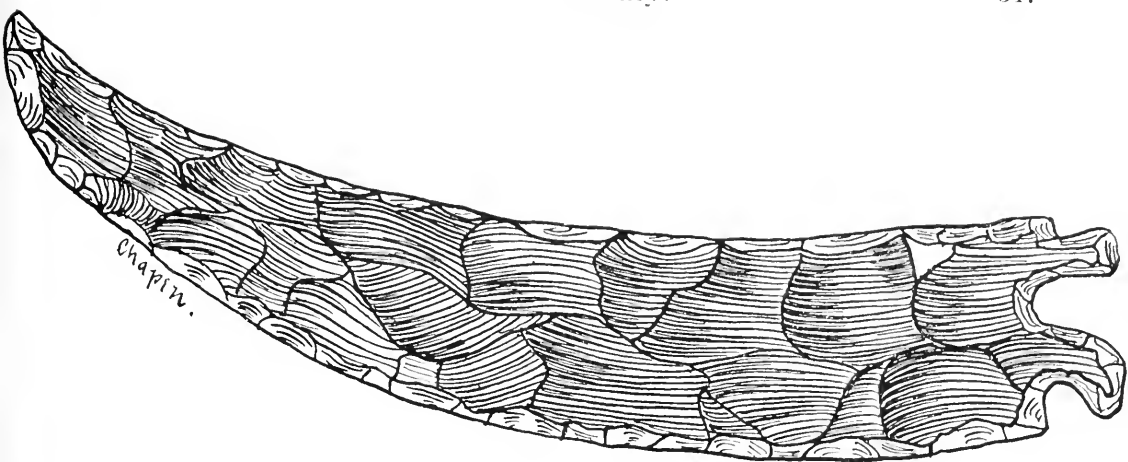


Fig. 508. S. 1-1.

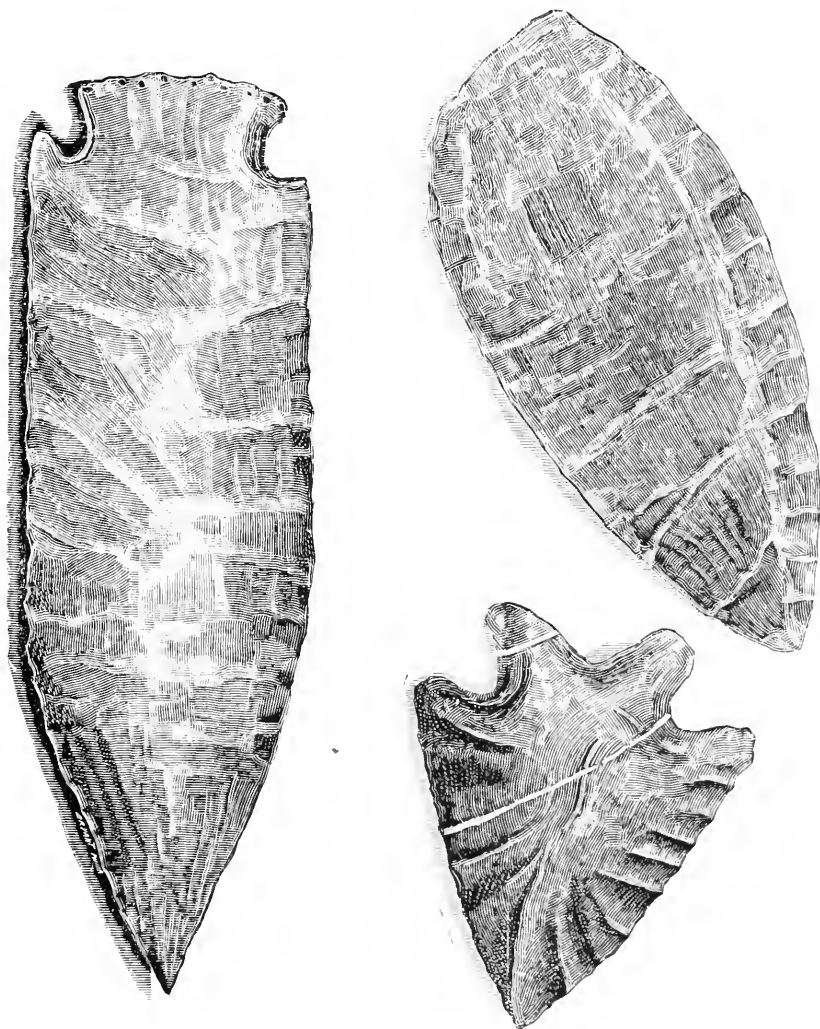


Fig. 510. S. 1-1.

Fig. 510 shows a typical oval knife and long spear-head and a very beautiful black flint arrow-head with two white bands through the stone. It will be seen in the spear-head that the sides are straight for some distance and then gradually converge to a point. These three beautiful specimens are from Mr. S. H. Binkley's collection, of Alexandersville, Ohio.

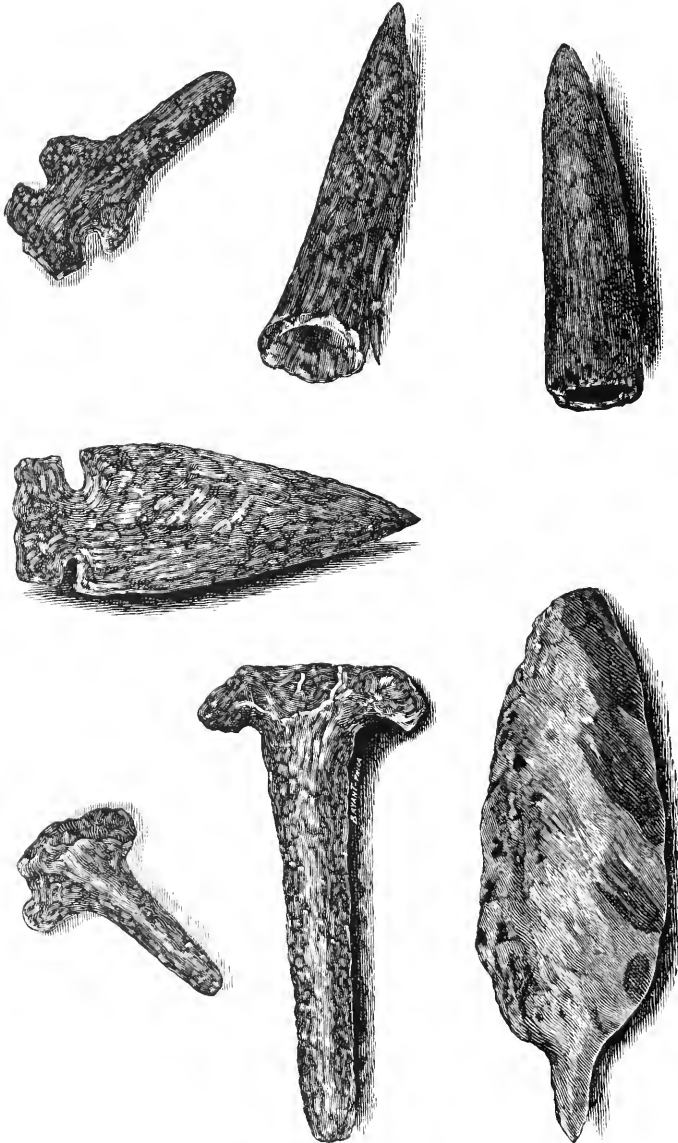


Fig. 511. S. 1-1.

This figure is reproduced from Mr. S. H. Binkley's book. The book was never published. Mr. Binkley died at the age of 90 years, in March, 1900. For many years he had been engaged in preparing an illustrated work confined to a description of his collection. Mr. Binkley made all his own drawings and printed his own text by hand in a large blank book. It took him from 5 to 10 hours to complete one page. The book reminds one of the old German hand-printed volumes, and it is no exaggeration to say that it is one of the finest manuscripts of modern times. Such illustrations as I have reproduced from Mr. Binkley's drawings are not retouched or altered, but the engravers have followed his copy exactly, yet they scarcely do him justice. Mr. Binkley deserves more credit when it is borne in mind that he was more than 75 years of age when he began the tedious and continuous labor necessary to complete the manuscript.

At the upper portion of Fig. 511 are shown two antler tips, which were used as arrow- or spear-heads. A drill

with rounded point is to the left of the two bone objects. The arrow-head in the center is a very fine specimen. The large drill below has its shoulders turned down, an uncommon feature.

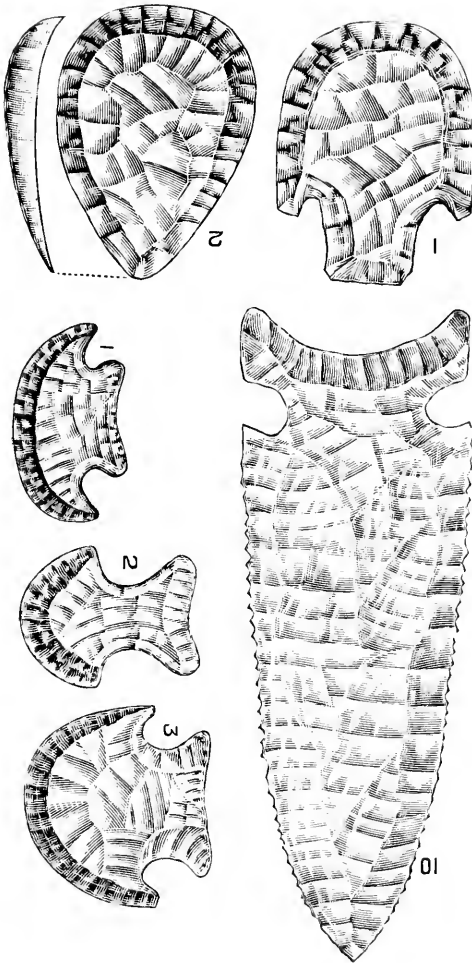


Fig. 512. A large rotary spear head (10) and 5 kinds of scrapers. These are all from Illinois. I am indebted to Mr. W. J. Seever for the loan of this cut.

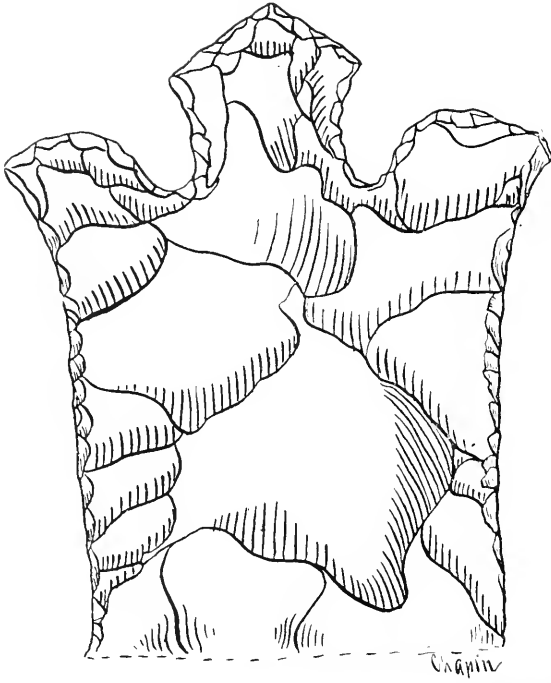


Fig. 513. S. 1-2.

The upper portion of a large obsidian spear-head found in one of the alars of the Effigy mound, Hopewell Group. While the material is from Yellowstone Park, or the quarries of the Southern Rockies, the form is very like that observed in a few large barbed spears of the Ohio valley. There is a spear at Bainbridge, Ohio, of Arkansas pink quartz, 17 inches in length.

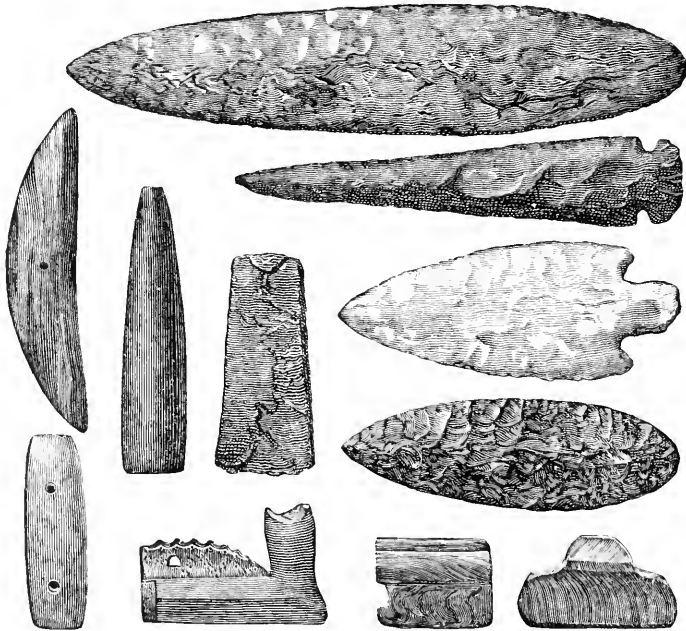
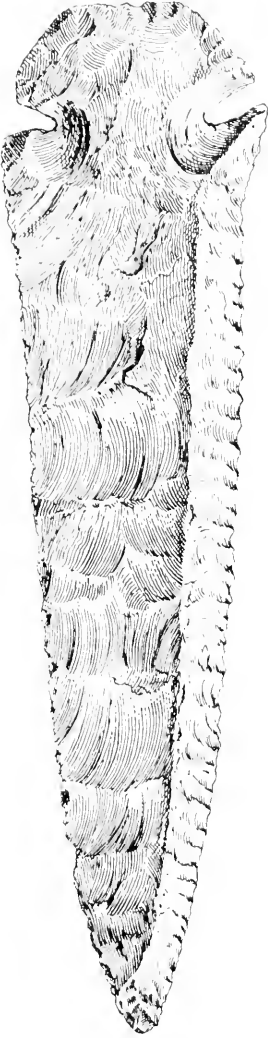


Fig. 515. S. 1-3.

Eleven objects from the collection of Mr. Leslie W. Hills, Fort Wayne, Ind. These will be readily understood by collectors and I need not remark upon them. They were all found in Indiana, Illinois and Ohio.



A very large rotary spear-head from Elkton, Giles Co., Tenn. Quite a number of these finer spear and lance-heads have rounded tops, and sometimes the top is smooth as if it had been polished. Whether this polish is due to the fastening, or was given intentionally, I do not know. It has the same appearance as the polish on the ends of flint celts, hoes, etc. One may well consider it as intentionally produced.

Fig. 514. S. 1-1.

ORNAMENTS, CEREMONIALS AND UNKNOWN OBJECTS.

These are found in great numbers in the Ohio Valley and present multitudinous forms.

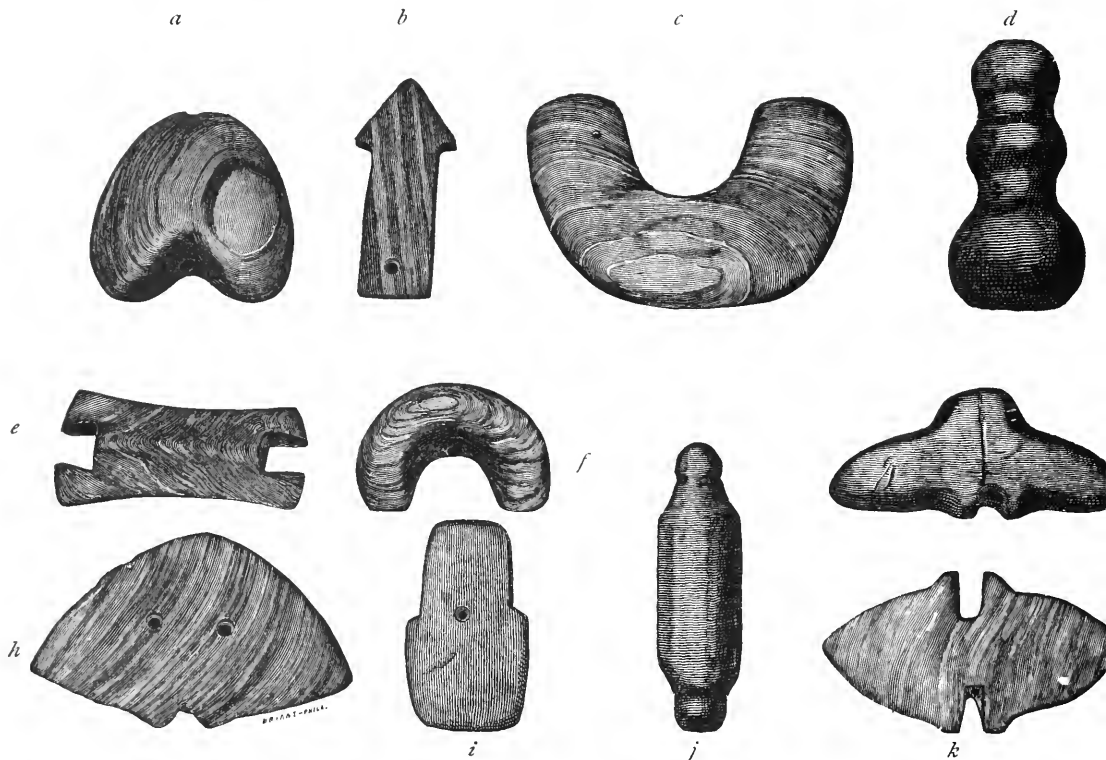


Fig. 516. S. nearly 1-4.

Fig. 516 shows 11 specimens from Professor W. O. Emery's collection, Crawfordsville, Indiana. These were found in various portions of Ohio, Indiana and Michigan. If we deal with facts absolutely we cannot tell for what purpose these 11 specimens were used. It is a typical group. All are rather unusual forms of the "banner," "crescent," etc. Some are unique. I cannot name them. The materials are slate of various shades.

a. Heart shaped ceremonial of banded slate, smooth finish, perforation through center. The extreme length 4 inches. Montgomery County, Indiana.

b. Pendant of banded slate $5\frac{1}{4}$ inches long. Coshocton County, Ohio.

c. Crescent of banded slate, smooth finish. Greatest dimension 6 inches. Maximum thickness 1 inch: gradually becoming thinner at the end. Montgomery County, Indiana.

d. Double grooved pestle of dark syenite, finely polished. 5 inches long. Putnam County, Indiana. Shows no sign of use.

e. Banner stone smooth finish, perforated through center. $4\frac{1}{4}$ inches long. Montgomery County, Indiana.

f. Crescent, perforated through center. $3\frac{3}{4}$ inches broad. Montgomery County, Indiana.

g. Peculiar ceremonial, dark colored slate with circular perforation. Morrow County, Ohio. Length 5 inches.

h. "Butterfly" ceremonial, banded slate, $5\frac{1}{2}$ inches long. Montgomery County, Ohio.

i. Pendant of slate $3\frac{1}{4}$ inches long. Morrow County, Ohio.

j. Dark colored slate ceremonial, grooved about the ends as though for attaching cord or sinews. 5 inches long. Morrow County, Ohio.

k. "Butterfly" ceremonial of banded slate, smoothly finished, perforated from both sides but not quite through. Length 5 inches. Montgomery County, Indiana.

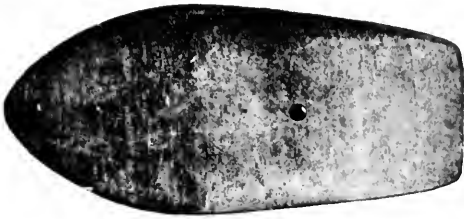


Fig. 517. S. 1-3.

Fig. 517 is an interesting ornament or pendant, straight at one end and rounded at the other. It is also from Prof. Emery's collection. Found in an Indian grave near Crawfordsville. Banded slate, $\frac{1}{4}$ inch thick.

Fig. 518, a magnificent butterfly ceremonial or banner-stone, from the collection of Mr. W. Mills, Curator of the Ohio State Archaeological and Historical Society Museum, Columbus. This is an unusually fine specimen and is made of dark slate. Knox Co., Ohio.



Fig. 518. S. about 2-5.

Fig. 519 is of blue slate, striped. Was found in Ohio, but is now of Mr. Hamilton's collection, Two Rivers, Wisconsin. Originally in Moorehead Col.

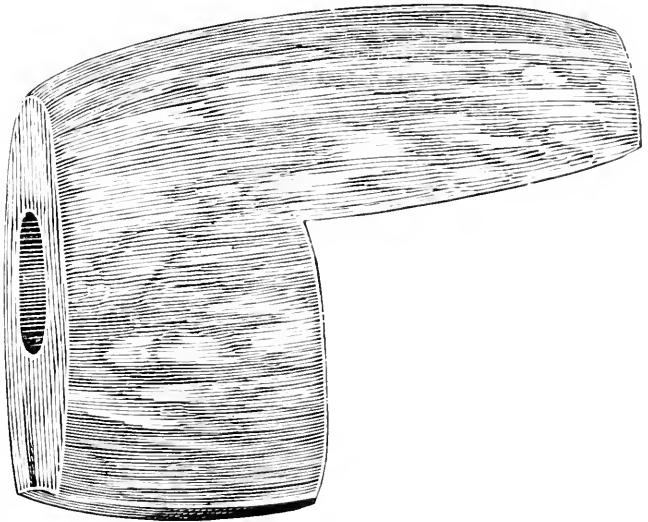


Fig. 519. S. 1-1.

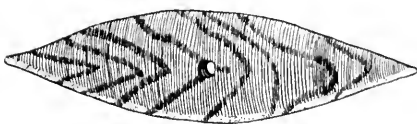


Fig. 523. S. 1-4.

Fig. 523 is a pointed ornament of banded slate from southern Ohio.

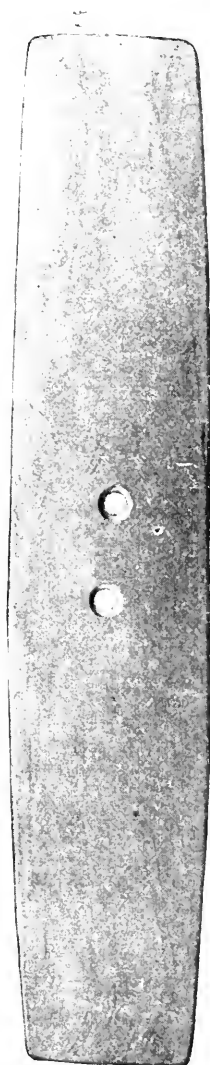


Fig. 520. S. 1-1.

Fig. 520 is a typical ornament with square corners, taken out of a grave in Kanawha Valley, West Va. Cut from *Stone Art*; Gerard Fowke; Bureau of Ethnology Report, '91-2.

Fig. 521 is a perforated ornament of galena, found in southern Ohio. Galena was occasionally made into ornaments and ceremonials. The aborigines never discovered its smelting properties. I have seen ornaments, etc., which were 85 per cent. pure lead, the crystals showing plainly and sometimes bits of shining lead half an inch in diameter. Because of these bright bits of lead the natives selected such material. Moreover, galena was heavier than stone or hematite.

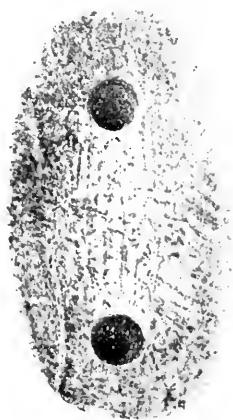


Fig. 521. S. 2-3.



Fig. 522. S. 1-4.

Fig. 522 shows four objects from the collection of Mr. George A. Katzenberger, Greenville, Ohio. The one to the left is flattened on one side, concave on the other, and ornamented with incised lines. The next is an effigy almost approaching the bird ceremonial type. At the extreme right is a small effigy of dark slate, and to the left of it a very long flint knife.



Fig. 525. S. 3-4.

Fig. 525 is an unfinished ceremonial. It shows the method of manufacturing, and when completed might have been one of several forms. It appears that the stone was worked down quite thin before the rims were cut out. It was found in Hancock County, Ohio.



Fig. 526 presents two very interesting specimens from the collection of Mr. Leslie W. Hills, Fort Wayne, Ind. These are both of slate and were found in Indiana. It is suggested that the perforated crescents were worn upon the head in imitation of horns. This theory may be correct.

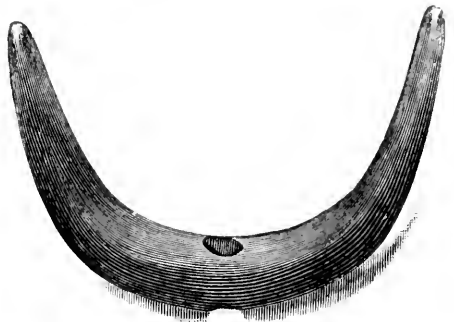


Fig. 526. S. 1-2.



Fig. 524. S., about 2-3 for crescent, and 1 4 for others.

These four specimens were found in Clark County, Indiana. The collection of Dr. W. F. Work. No. 1 is made of green slate slightly banded, and is very perfect in contour and highly polished. The concaved surface below will fit the forehead or crown.

No. 2 may be a pipe although by blowing through the large end a loud sound is produced. It is about 4 inches long and $1\frac{1}{2}$ inches in diameter. The hole through the long axis is half an inch wide. It tapers gradually until it is but $\frac{1}{4}$ of an inch in diameter at the distal extremity. There is a slight attempt at ornamentation.

Through No. 4 a hole $\frac{1}{2}$ inch in diameter and slightly tapering passes.

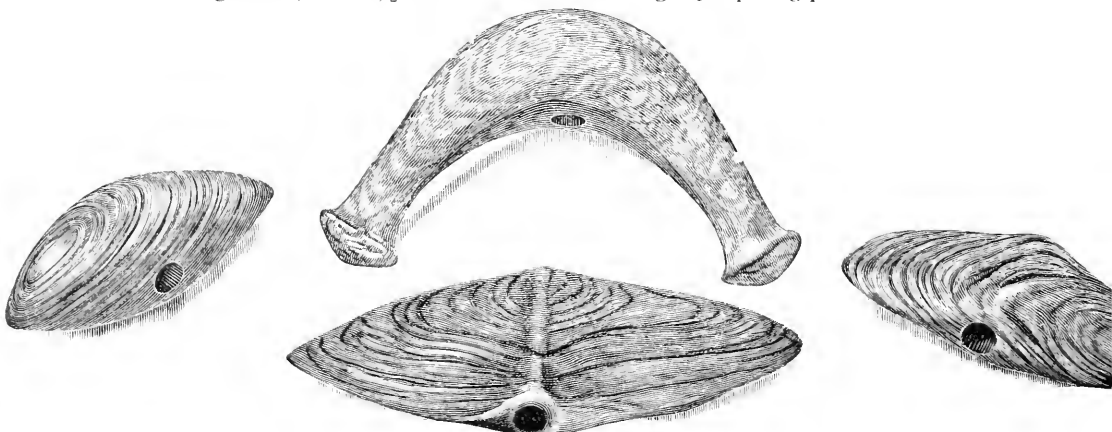


Fig. 527. C. 12. S. 1-2.

Fig. 527 shows four interesting specimens from Mr. H. S. Hurlbutt's collection, Libertyville, Ill. The crescent is very like those found in Canada having enlarged ends. The four perforated banner-stones are fairly common throughout the Ohio Valley.

The crescent was plowed up near Fairdrill, Wis.

The smaller ceremonials (end ones) were found in Morrow and Ross counties, Ohio. The "banner-stone," a surface find, McHenry County, Ill.

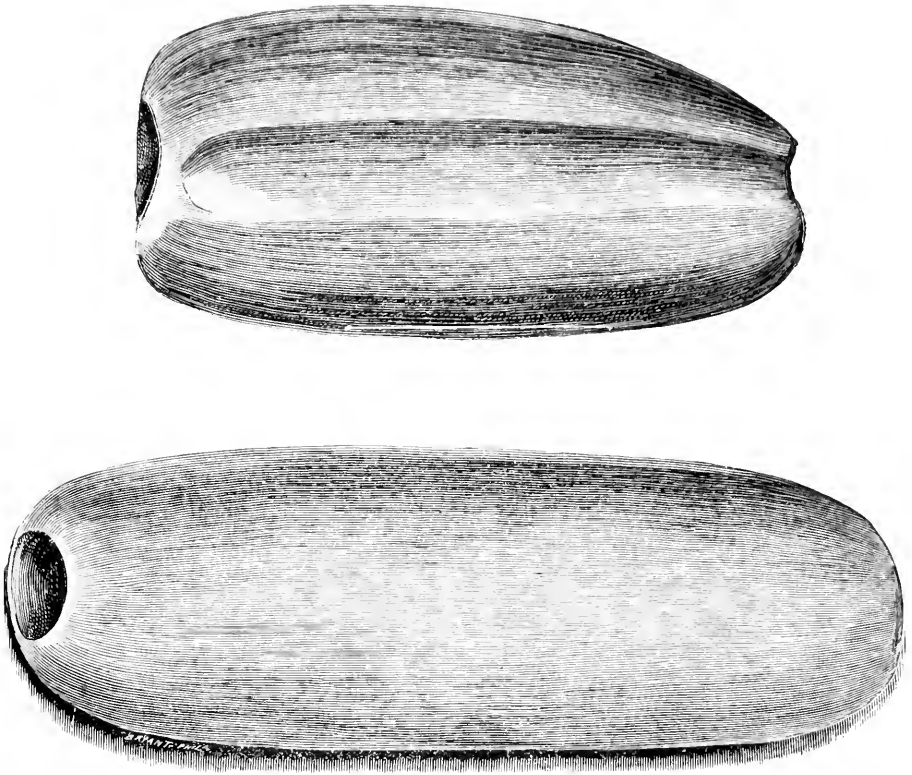


Fig. 528. S. 1-1.

Fig. 528 presents two large tubes from the Binkley collection, Alexandersville, Ohio. The upper one has a side groove. The lower one is the more common form. Both are of sandstone. Many theories are advanced. One is that these tubes were used by medicine men to draw the evil spirit out of the sick. Another, that they are whistles, because they will emit a loud noise when properly blown. Nothing is positively known as to their use. The Great Miami Valley, where Mr. Binkley lived long, has yielded many fine specimens.

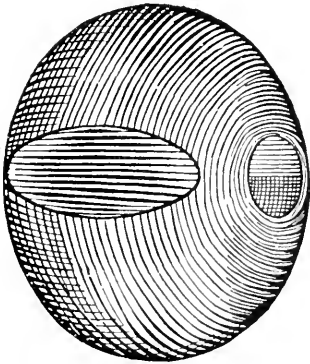


Fig. 530. S. 1-1.

In Fig. 530 I present a drawing of one of these tubes in order that a clearer idea may be had of the form. It was found in Fayette County, Ohio.

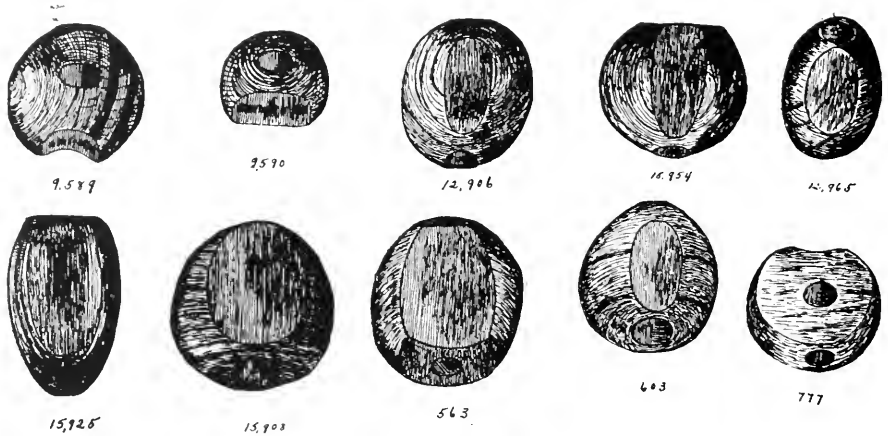


Fig. 529. S. about 1-3.

Fig. 529 is a group of flattened or grooved tubes or large stone beads from the collection at Columbus, Ohio, owned jointly by the State Historical Society and the University. They are mostly of banded slate.

CARVED SANDSTONE "SPOOLS."

The use of these is absolutely unknown. They are found in considerable numbers in the Ohio Valley.

In Fig. 531 I present three side views and two end views of specimens in the collection of Mr. J. W. Tweed, Ripley, Ohio.

It will be noticed that the decorations are of various kinds, but the designs or lines have some semblance of regularity.

Ripley is on the Ohio river above Cincinnati. More "spools" come from along the Ohio than elsewhere.

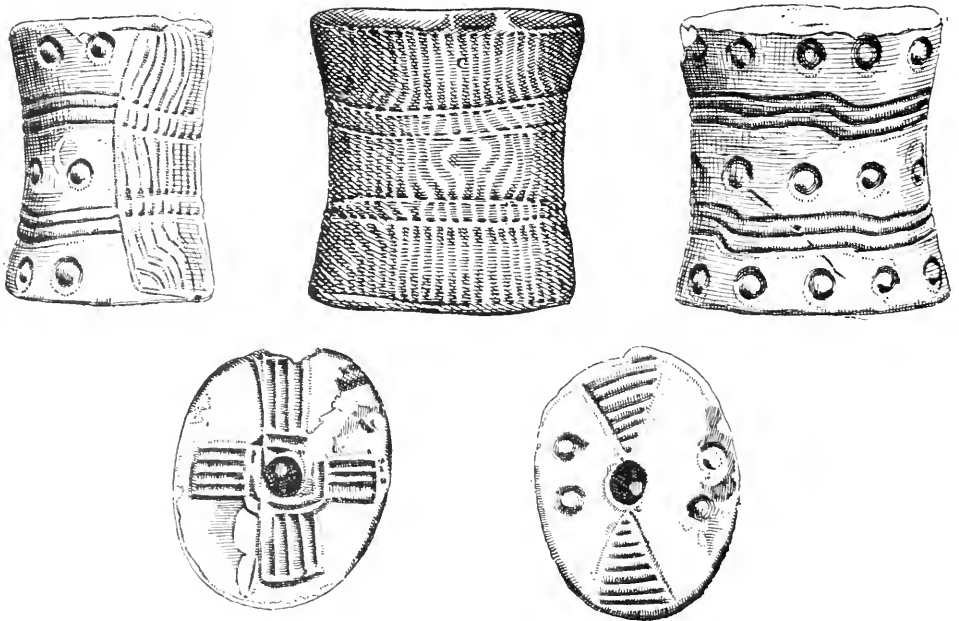


Fig. 531. S. 1-1.

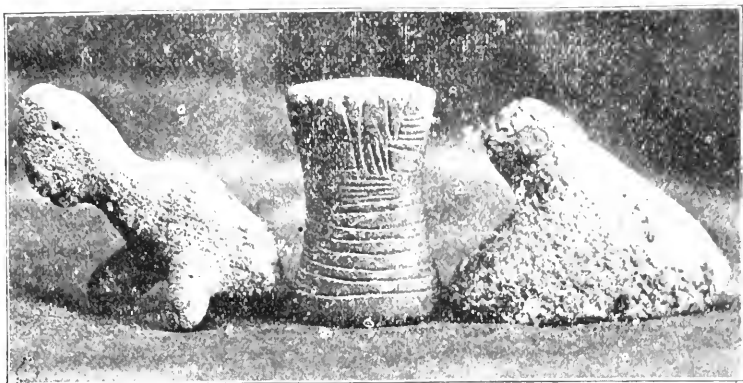


Fig. 532. S. 1-2.

Three objects from the collection of Mr. Charles Wertz, Portsmouth, Ohio. The central one is an engraved "spool," while on either side are rough sandstone effigies.



Fig. 533. S. 1-3.

Fig. 533 is a cannal coal ornament found in a gravel-pit, alongside of a skeleton, near Lima, Ohio, and is in the Museum of the Ohio State University at Columbus. Objects of cannal coal are seldom found. Found by Mr. James Pillars

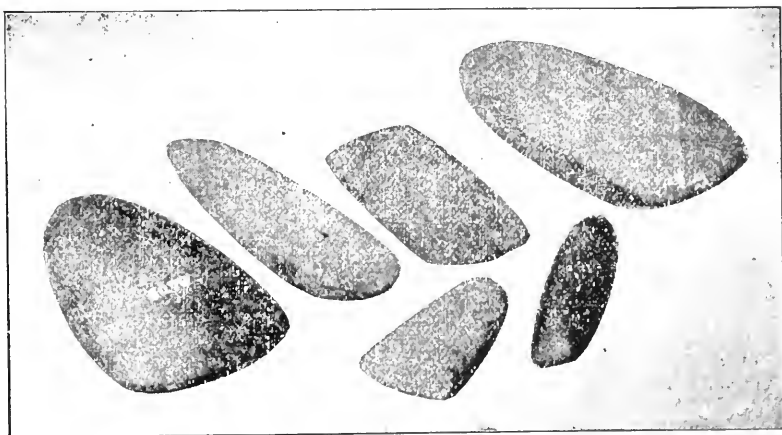


Fig. 534.

CELTS AND AXES.

These are exceedingly common. All the varieties described elsewhere, save gouge, adze and double-bitted are found. I shall only illustrate the rare and finest forms. Materials; harder stones. Seldom of soft stones.

In Fig. 534 a group of typical celts is shown from the Ohio State Archæological and Historical Society collection.

Celts are oval, square, flat on one side and concave on the other, curved on edge, etc. Axes vary from $\frac{2}{3}$ of an inch to 16 inches in length. The largest I have seen weighed 20 lbs. Nos. 1, 2 and 3 of Mr. Berlin's divisions (page 227) occur. Chisels and short celts, broad and thick celts, etc.,—there is no lack of them! Hematite celts are not rare; stone ones more common than those of flint. Rude notched axes are seldom found. Types like Figs. 1 in 459, and 1 and 4 in 460 of the St. Lawrence are not found. I suppose that in the Columbus Museum there are at least 2,000 axes and celts.

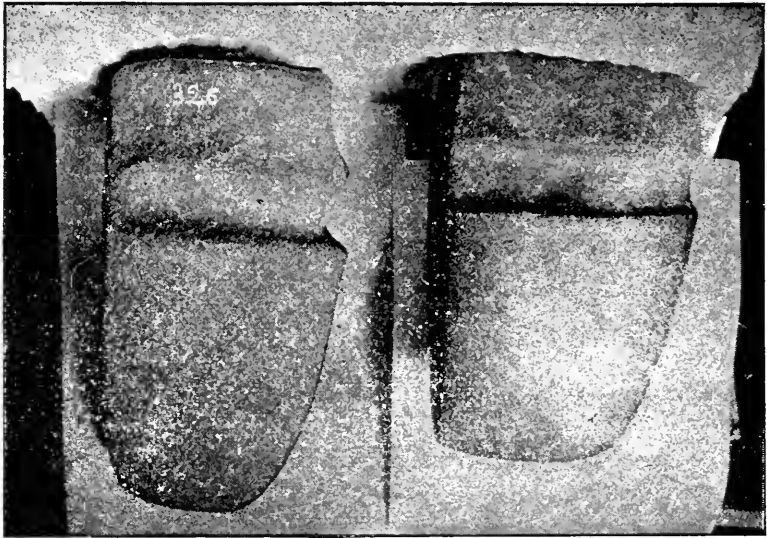


Fig 535. S. 1-5.

Two very large and fine axes, Ohio State University Collection. I am indebted to the Ohio State Archæological and Historical Society for the loan of these and other cuts.

Both of granite; Warren County, Ohio. Moorehead collection.



Fig. 536. S. 1-1.

Collection of Mr. V. Sonovec, St. Louis. The smallest grooved axe I have seen. Found in Missouri. Material, granite.

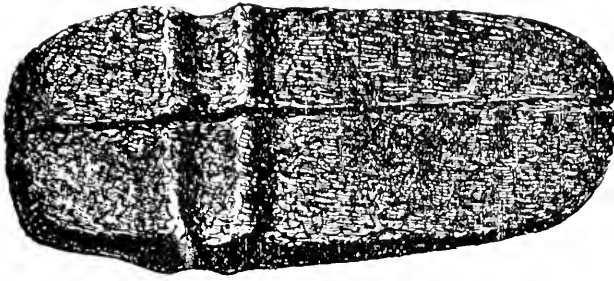


Fig. 537. S. about 1-4.

Fig. 537. Double grooved axe from Dallas City, Illinois. Mr. M. Tandy's collection. A deep, narrow cut is in the side from top to edge. A similar cut is on a celt in the State Museum at Columbus.

Fig. 538. Small squared celt from Arkansas. These are not very common.



Fig. 538. S. 1 1.

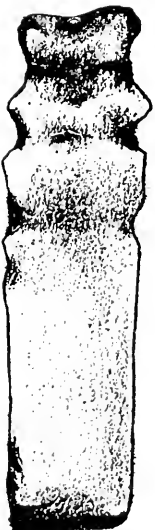


Fig. 539. S. 1-5.

Axe with three shallow grooves. A rare specimen. Found in Putnam County, Ind. The specimen is 15 inches long, has an average width of 4 inches and a maximum thickness of 1 inch at the grooved end, from which it gradually tapers to $\frac{1}{2}$ inch at the other end, finally terminating in a finely wrought cutting edge. It will be seen from the figure that the upper half carries three grooves, very prominent at the sides, but consisting of slight depressions only across the faces. The top is hollowed or depressed. The sides are beautifully rounded and the entire surface highly polished. The material is ferruginous slate, having a hardness of five on a scale of ten. The specimen is dark olive in color. For what purpose were the grooves and depressions at top? As they show no appreciable signs of wear, it would seem hardly probable that they ever served to fasten the object to a handle; on the contrary, I am inclined to think that if, in fact, it represents one form of a spade it must have been used as such without the aid of a handle, that is, with the hands alone. The form and size render it admirably suited to such use. Prof. Emery's collection.

ADDITIONAL INFORMATION.

Figs. 3 and 4 show many Ohio specimens. In Mr. Katzenberger's collection it will be observed that several of the slate objects are not only drilled after the prevailing custom, but have additional holes through the "wings." I cannot understand this. Flat tablet-like stones with several perforations are also found. Can these be more recent, or did the tribes about Greenville depart from prevailing customs?

Fig. 3, p. 20. Collection from Eastern Ohio.

- a. Sculpture of wolf (?) head in stone.
- b. Types of ornaments. The fourth one to the right is rare.
- c. Typical roller pestle.
- d. Next to the tube, a very fine drill. (?)
- e. Next to the spear, another animal effigy.
- f. Flint implements of good workmanship.

Fig. 4. S. 1-4. George Katzenberger's collection, Greenville, Ohio.

a. In the center an unfinished "butterfly ceremonial." Early stage in the manufacture. A thick projection is left in the center, and through this the perforation would subsequently be made.

b. Long catlinite pipes, modern, on either side of the unfinished object.

c. Near the edge, a finished "butterfly," and in the center various slate objects, disc, pipe, etc.

d. In the middle a grooved and perforated axe. The perforation may be recent. I have seen no perforated axes in the Ohio Valley.

e-k. Between these letters are several interesting objects. Near the edge (e) is a flat disc with nine perforations. Two pestles of fine form are shown. A rude axe is next to the left pestle.

g. An ornament (?) very concave and a roller pestle. A common axe in the center. Below the roller is a "butterfly" having three perforations in addition to the usual central one. Are these recent?

h. A common ornament and a flat slate object with four holes. In the middle a large axe of usual form.

i. Next to the axe (right of it) a very large flint knife and a peculiar curved ceremonial with two holes. Just opposite it is a ceremonial with short wings and an unusually long body. This type is rare.

j. A curved, slender pebble or water-worn stone used as a roller pestle.

Prof. F. W. Putnam, in his Tennessee explorations many years ago noted these strange grooved "tool sharpeners" such as I have illustrated in Fig. 493. I quote his remarks.*

"In connection with these polished implements of stone, it is of interest to note a fragment of fine-grained sandstone (12,344), seven inches long, four wide and two thick, which I found between the graves, in the burial mound here particularly referred to. This fragment is evidently a portion of a sharpening and polishing stone that had been long in use. Its opposite surfaces were concave and were worn so deep by long use that they had nearly come together, and to this fact the breakage of the stone at this particular point was due. On the sides and in the large concavity of one surface, are small grooves and several deeply cut lines, formed by rubbing implements of different kinds on the stone. As will be inferred, this is a very interesting specimen, illustrating the method of polishing stone implements, and with the three rings, probably as important as any obtained from this mound."

*Eleventh Rep. Peabody Museum, '78. P. 331.

Whole pottery is rare in Ohio, Indiana, Eastern Pennsylvania and Northern Kentucky. Fragments of inferior ware strew the village sites and are frequent in mounds. At Madisonville, Willoughby, Fort Ancient, Portsmouth and Aurora some entire vessels have been found in ash pits of large village sites and occasionally in mounds. Beginning below Aurora on the Ohio the pottery gradually changes until, at the mouth of the Wabash, we find the true southern forms.

Decorated fragments are very numerous. A few fine jars— as artistic as southern forms—were exhumed by Squier and Davis 50 years ago. But they represented an extraordinary effort, for mound-building as well as hunting tribes in Ohio Valley north of the Wabash were not proficient in ceramic art. They excelled in stone and flint working.

A in Fig. 5 (pg. 21) will stand for the "bowls with 4 handles" of Madisonville cemetery, Ohio. If Fig. 10 (pg. 26) were not of coiled ware it would pass for a plain cooking pot of the usual Ohio Valley type. The ordinary dish to the left of A (Fig. 5) is also found in the Ohio Valley.

Stone bowls and steatite vessels are rarely, if ever, found. But roughly made mortars are sometimes found. Cup-shaped depressions are common on large boulders and in small sandstone or limestone fragments.

Rude flint celts and polished flint celts, turtle-backs, "paleolithic implements" and rough flint discs or what-not in all stages of manufacture are found in great numbers.

Grooved hammers and many varieties of hammer stones; all sorts of pecking, grinding and polishing tools exist in countless numbers. I venture to assert that in Licking, Coshocton and Ross Counties, Ohio, and about Maysville, Kentucky, and Lawrenceburg, Indiana, a wagon load of them could be secured in a few days at each of the places named.

In the description of pipes Fig. 485 (pg. 335), by error of the printers, has been inserted upside down.

It will be seen by the illustrations of the Ohio Valley section that most of them show ornamental or ceremonial stones of some description. The region is famous for its ancient art in slate and granite. In other sections we have shown types not found in this region. But it will be observed that there are a great many more forms in the Ohio Valley than are found elsewhere. The range of types and subdivisions of types was immense. I suppose that there are 25 large collections in the United States which contain at least 3,000 ornamental or ceremonial stones from the Ohio Valley. Years hence, when the science of prehistoric archaeology shall have sufficiently advanced, scholars will be able to separate all of these multitudinous forms into their proper groups, and to say that this group stands for such and such a tribe living in such and such a valley; that its presence outside of its habitat indicates aboriginal barter or conquest, etc. We are able even at this early date to roughly forecast the more accurate and complete classifications of the future.

To me the most interesting part of archaeology is work in the field, and the comparison of the remains or art forms of one river valley with those of another. The only way to obtain a correct and comprehensive idea of the archaeology of a valley is to follow the main stream from source to mouth. This must be done personally. One cannot obtain an adequate idea through the reports, by maps, or by visiting two or three localities on the river. I have always thought that the most satisfactory (to myself) work that I ever did was the following of the Muskingum, Scioto and Little Miami rivers from their smallest streams to their mouths. If one desires to become really proficient in field work and to understand every detail which it is possible to learn, from either surface searching or exploration, this is his method of procedure. The collector and the superficial student will find such a trip of neither value nor interest. A box or two of specimens from every village site will not only show all the materials but exhibit the gradual change of types; how that one site was influenced by foreign trade and another was not; that one was cultured, whereas one near by was just the opposite, etc. The slightest differences in pottery, flint implements, etc., will be noted and conclusions reached accordingly. This, briefly, is *real* archaeology.

SECTION XII.

THE SOUTH.

DR. ROLAND STEINER, Grovetown, Ga.

[Dr. Steiner confines his remarks to Georgia, so I have interspersed through this paper observations and illustrations dealing with the South as a whole.—W. K. M.]

Georgia is now called the Empire State of the South. It appears to have always been an Empire State. It was an Empire State before its discovery, when it was occupied by the Indians.

The Appalachian chain of mountains touches only its northern tier of counties. Many rivers run through its longest axis N. W. to S. E., producing rich and fertile valleys, covered with dense woods of a varied character. These rivers, valleys and springs rendered it a veritable paradise for the hunter and fisher. When the occupant was a savage and depended upon the chase for food and clothing he found here all that nature could provide for him, and with a temperate climate, he could live with greatest ease, and in happiness.

When the colony of Georgia was planted by Oglethorpe upon the present site of Savannah, the Indians occupying the country consisted of many tribes associated together in a strong league known as the Muscojee Confederacy. The most powerful tribes of the Confederacy were the Uchees ; Upper, Middle and Lower Creeks. The Muscojee Confederacy extended from the Atlantic Ocean to the neighborhood of the Chattahoochee river, where the country of Cherokee began, extending to the Appalachian Mountains. The Cherokees by conquest were amalgamated in the Confederacy. Their habits and customs were much the same as other North American tribes ; they hunted and fished, had small plantations that they cultivated in the rich valleys along the banks of larger or smaller streams ; lived in huts constructed of notched logs, skins, or the barks of trees ; buried their dead in graves and mounds, or cremated them ; were given to feasts and fasts ; had many ceremonies ; believed in a future state, propitiated or worshipped the Great Spirit, etc. Their weapons, implements and ornaments were made of stone, shell or wood, their clothing manufactured from the skins of animals, birds, grass and the inner fiber from the barks of trees ; upon their plantations they raised corn, peas, potatoes and melons.

At the time of the colonization of the states the number of Indians inhabiting the territory, was estimated to be in the neighborhood of 50,000. They had permanent homes, cultivated the soil, and were well organized for offense or defense.

They were ignorant of the use of iron—they had not reached the bronze era, and were in the beginning of the copper age, treating it as a malleable stone. But in the manufacture of objects from stone, bone or shell, they equaled all known primitive peoples. The skill exhibited in the manufacture of stone objects, particularly flint-chipped ones, declares a superiority over some other sections of the Union. The grooved axes, polished hatchets, rubbing stones, discoidal stones, and many ornaments were of dicorite, serpentine, sandstone, etc. The spear and arrow-points, knives, and the finest discoidal stones were of flint, jasper, quartz, chert, chist, chalcedony and agate

We shall not consider the objects found within the limits of the state, though we do not claim that all were manufactured here by one people, with an eye single to certain types. The inter-tribal relation existing between far removed tribes must account for the presence of forms rare in one section, abundant in another. We have met with single specimens of spear and arrow points in one part of the state that were plentiful two hundred miles distant. The Indians, in their respective localities, depended upon the material found *in situ* for the manufacture of their necessary tools, weapons, and ornaments. For instance, in the lower, eastern and south-western portion of the state, where flint and jasper abound, with no quartz or chist—the chipped objects are found of the former materials. In the middle portion of the state quartz and chist abound—the chipped objects are of these materials. In the northern belt, where a black chist is present, it is the favorite material. Yet in every section there are found specimens from other sections. On Big Kiokee Creek, in Columbia County, is a large aboriginal village site that for a long period was occupied by one or different tribes of Indians. The material used was principally of quartz and chist. Forty miles distant, in Burke County, is another village site—the old Evans place—from which site we collected over 16,000 specimens, now in the United States National Museum, not one of which was of chist and very few of quartz, the material used being flint and jasper both of which are plentiful in the immediate locality.

- a.* Rough stone mortar. Some shell beads—disc form—are shown in the mortar.
- b.* Long celt of southern type.
- c.* Short celt with edge abruptly bevelled off.
- d.* Broad cone-shaped stone (convex above, flat underneath).
- e.* Just above the round stone (*d*) and near the corner of a celt is a typical ceremonial like that shown in Fig. 239.
- f.* A rude quarry axe or digging tool, grooved around the center. This type forms a connecting link between the notched axes mentioned by Dr. Steiner and Prof. Berlin and the rougher grooved axes.
- g.* A typical grooved axe.
- h.* One of the grinding or polishing stones mentioned by Dr. Steiner as common.
- i.* A good specimen of a cup stone.
- j.* Small, common celt, highly polished.
- k.* Typical southern axe. No great difference in form between axes *g* and *k*. To the left of *k* is a very large spear-head. The original of this must be 7 or 8 inches long.
- l.* Type of jar common in the South. Somewhat different from the Missouri and Tennessee forms.
- m.* Peculiar wedge-shaped celt, the sides and top being squared.
- n.* A discoidal stone is shown to the left of the celt and to the right and just below is a common form of southern pipe.
- o.* A peculiar flat stone, perforated.
- p.* A decorated jar. Below specimens *o* and *p* is a long effigy pipe somewhat like that one shown in Fig. 220.

GROOVED AXES.

We shall first consider grooved axes, for they are met with everywhere in the state. They are usually manufactured from diorite, serpentine and sandstone, although we have seen them of quartz and chist. They do not, as a rule, differ in appearance from types found in other states of the Union, but are not as large as some we have seen from Ohio. They vary in length from 2 to 12 inches and in width from 2 to 6 inches, weigh from 4 ounces to 10 pounds. One 10 or 12 inches in length is very rare and is generally highly finished and unbroken. The common measurement is from 3 to 6 inches in length and from 2 to 6 inches in width. Some have transverse grooves encircling the axe, whilst in others the groove terminates on each side at a flat back which may have been intended for the insertion of a wedge for tightening the axe to the handle. In some the groove is near the head, whilst in others it is nearer the middle of the axe. Those from 3 to 6 inches in length were, in all probability, used as much for weapons as for other purposes, for we do not think that their sole use was for deadening trees. So much must be left to conjecture as to the use of many prehistoric implements that it was impossible to assign to any one object a special use. Those of extraordinary size and highly finished were, perhaps, used in ceremonies. Many of the grooved axes show evidence of having been broken and resharpened. On page 144, in speaking of Tennessee axes, an unfortunate error was made. The types shown in Mr. Barnes' collection have the groove entirely encircling the axe. There are but very few exceptions to

this rule. The sentence, "An inspection of Fig. 6," etc., should read: "An inspection of Fig. 6 will show readers that most of the axes of the Middle South have a groove extending entirely around."

Thus, it will be seen that the South contains axes grooved differently from those found in the Middle South. Types are shown in Figs. 540-1-2-3.

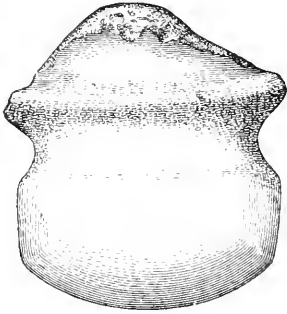


Fig. 541. S. about 1-3.

"Fig. 541, of granite, from Jefferson County, Tenn., seems to have a ridge on the upper side of the groove; but closer examination shows that it once had a groove projection, and that afterwards the poll was nearly all broken away and a new groove made lower down, so that what was originally the lower projection is now above the groove, the remainder of the poll being worked down to a point."*

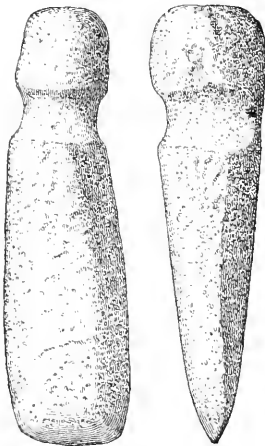


Fig. 542. S. about 1-3.

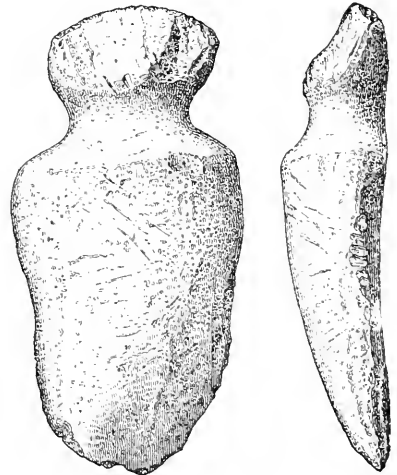


Fig. 543. S. about 1-3.

Figs. 542 and 543 are types of axes from McMinn County, Tenn. They are of argillite. The elliptical section of Fig. 542 shows that it is wider at the top than it is at the bottom. Fig. 543 is quite curved on the face.

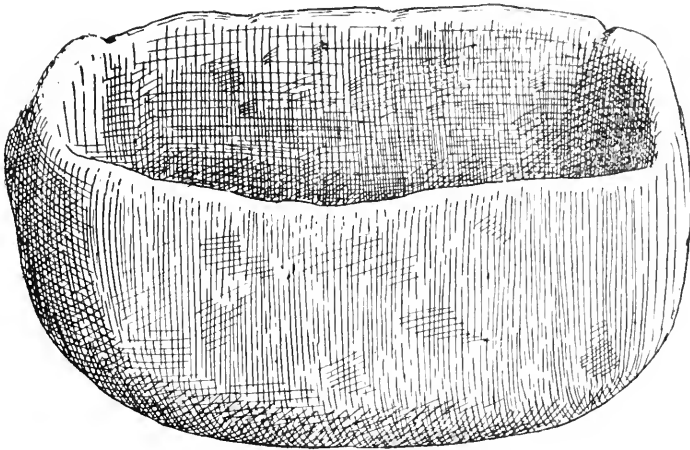
MORTARS AND STONE VESSELS.

Mortars are plentiful everywhere throughout the state and are of the general form and finish as those found in the South and East. In many types the cavity is simply a slight depression, whilst in others it is the depth of from two to five inches. Many are simply irregular masses of sandstone, very large and heavy, and in all probability were stationary mortars. In the small forms the outlines were more defined, assuming an oval shape

*Stone Art. Gerard Fowke. Bureau of Ethnology Report, '91-2, p. 71. These three figures are taken from Mr. Fowkes's paper.

which admitted of their being easily transported. We have seen an immense boulder of granite, weighing five or six tons, whose upper surface contained many mortars.

Bowls made of sandstone have been found in Georgia, highly finished, with small ear-shaped handles pecked and polished from a boulder. Much labor was expended in their manufacture. Ollas similar to those found in California, made of pot-stone, are frequently met with.

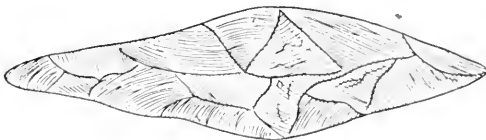


Stone mortar or vessel. Found on the Cumberland river below Nashville, Tenn. The illustration is loaned through the courtesy of Gen. Thruston.

Fig. 544 S. 1-4.

KNIVES.

This implement embraces types of the rudest to the most highly finished forms. It is almost impossible to determine where the knife begins or where it ends. Many spear and arrow points may have served as knives, for a cutting edge was the main thing desired by the savage, and he went about obtaining it with the least possible labor. Many flakes would answer for knives as well as the most highly finished object. Our opinion is that flakes were more generally used for knives. The usual forms found in other states were present here in Georgia, but in addition to the usual form there is one which we have called the razor-blade knife, usually made of chist, occasionally of flint. It seems from its shape to have been an original implement

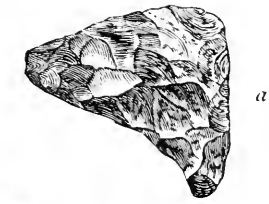


Double pointed knife.

Fig. 545. S. 1-2.

though a broken arrow or spear point retouched may have been used. The main point of advantage in the razor-blade knife, is that the stem answers

very well for a handle and could easily be inserted into a shaft of wood or bone. Another type peculiar to this section is the fan shaped knife made of



a

Fig. 546. A group of knives.



b

- a Form of knife quite common.
- b Knife with well-defined handle. Somewhat rare.
- c Semi-lunar knife with pointed ends.

c

Fig. 546. S. 1-2.

quartz. We have never seen it of any other material. They seem to have been confined to Columbia and Lincoln Counties. Circular disks of chert perhaps were used as knives, as many of them have a continuous cutting edge. The rectangular objects of flint, etc., may have been knives.

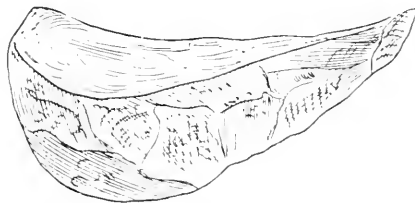


Fig. 547. S. 1-2.

Knife with sharp edge but broad across the back.

An irregularly shaped knife.



Fig. 548. S. 1-3.

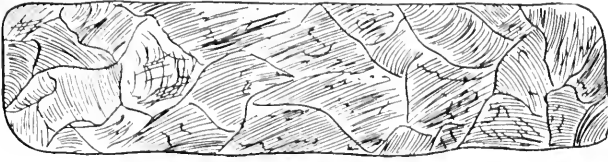


Fig. 549. S. 1-2.

inch in thickness. Chiefly made from flint or chist. The razor-blade shape, like Fig. 550, is often 6 inches long.

Some are serrated on one edge and may have been swords as well as knives. Another form of knife is the semi-lunar knife of chist or flint. All unsymmetric forms of spear or arrow-points were in all probability used as knives, as their irregular shape clearly shows that although they might have been used as a spear, they could not have been used as an arrow-point.

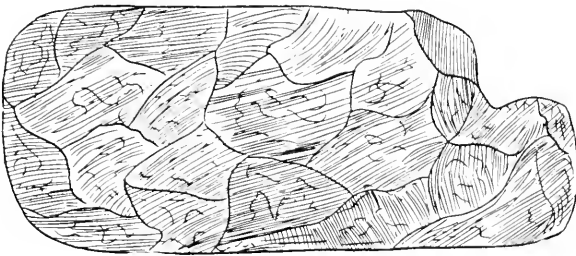


Fig. 550. S. 1-1.

Peculiar knife with short handle, called razor blade. This type is confined to certain portions of the South and is rare elsewhere.

May be a spear head or knife. From Frierson, La. Collection of Messrs. Frierson.

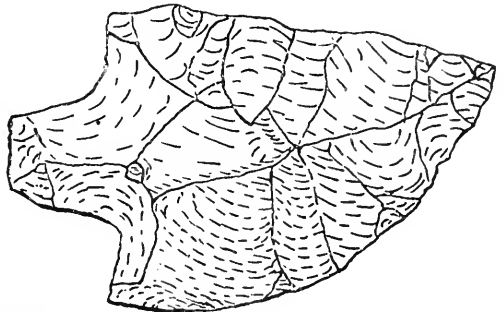


Fig. 553. S. 1 2.

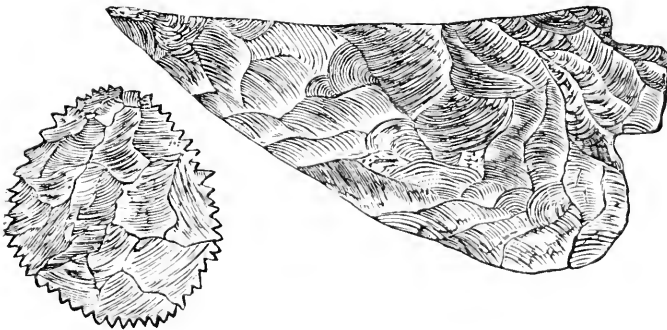


Fig. 552. S. 1-2.

Peculiar barbed knife. This form is somewhat different from types found North or East. A "saw" is shown to the left.

This peculiar knife is not from Georgia but was found near Frierson, La.

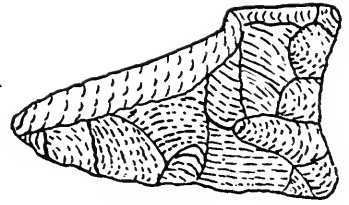
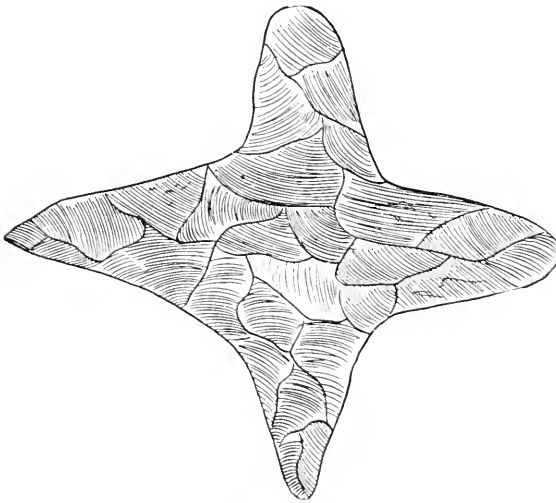


Fig. 551. S. 1-2.

DRILLS OR PERFORATORS.

We think it is a mistake to classify as drills, or perforators, all objects of a certain form. The larger and ruder may have seen service as drills in some soft material such as soapstone. It is impossible to bore into the harder minerals with any so-called stone drills, as they would soon be broken. Sand and water would not in any wise assist in the operation, as the wear upon the drill would be as great or greater than upon the object. Boring in soapstone could be easily accomplished with any flint splinters and done equally as well. Many of these objects are of the most delicate form and most highly finished and manufactured frequently from the most fragile materials. Their manufacture required skillful labor and frequently ex-



Peculiar object with four long arms or points.

Fig. 554. S. 1-1.

hibit the eye and hand of an artist. We have found them manufactured from chalcedony, agate, quartz and flint, and occasionally chist. Some are long and slender with expanding heads, closely resembling the shell hair-pins found in the Etowah mounds; others of a cruciform type, others again with long barbs resembling in form arrow-points. As the North American Indian felt a pride in his scalp-lock and adorned it with feathers, pieces of painted wood and stone, it seems reasonable to suppose that these so-called drills were hair-pins, used not only by the men but also by the women. We

called the attention of Dr. Thomas Wilson, of the U. S. National Museum, and Mr. Moorehead* to our views on the subject, and though

An implement similar to Fig. 554, but with arms rounded and not pointed. I have been considering these as perforators in some instances, and drills in others.

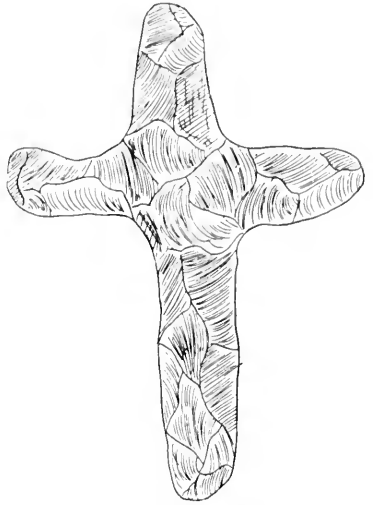


Fig. 555. S. 1-2.

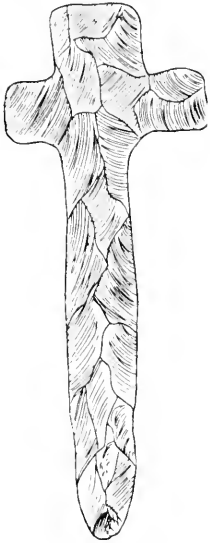


Fig. 556. S. 1-1.

This specimen reminds one of the cross. Was it a drill?

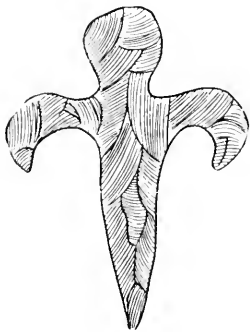


Fig. 558. S. 1-2.

This is a common drill.

A very peculiar effigy-like drill, the arms being turned down.



Fig. 557. S. 1-1.

*In 1896 I concluded that Dr. Steiner's theory was sound, and have since repeated the assertion in publications. However I agree with Mr. J. D. McGuire that many of them were drills. I have also thought that some of them might have been thrust through the nose and worn as ornaments.



Fig. 559.

Fig. 559. S. 1-1, from Bartow County, Ga.



Fig. 560.
S. 1-1.

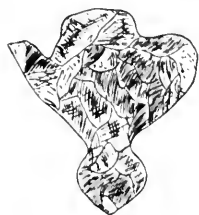
Fig. 560 is a medium between a perforator and a serrated arrow point.



Fig. 561.

Fig. 561, S. 1-1, is from Kanawha, W. Va. It has convex, square shoulders; slender; very long and slender tapering or straight stem, coming almost to a point at the base.

they did not entirely agree with us, they would not say that they had not been used as hairpins. Akin to the perforator or drills is another slender object that is pointed at both ends, very fragile and delicately made of flint,



Unknown flint object.

Fig. 562. S. 1-2.

quartz or chist. They are from one to two inches long. Our theory in regard to this object is that they were used as pins for holding together cloaks of skin or fibre by inserting them in eyelet and fastening them with thongs by tying the thong many times round each end of the pin.

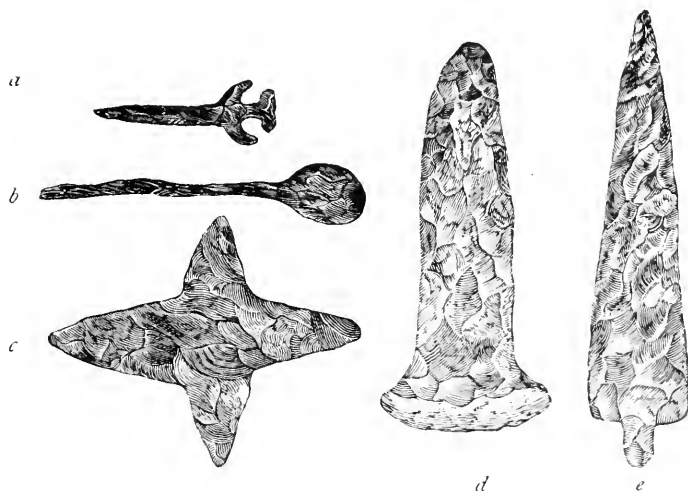


Fig. 563. S. 1-2.

Fig. 563 shows five peculiar flint ornaments and implements.

a is a very fine pin, the arms being turned up. We class it and *b* as hairpins.

In *c* the arms are pointed.

d may be a chisel or a knife.

e is a spear-head

BICAVE OR DISCOIDIAL STONES.

These objects when highly finished are worthy of veneration as works of art. Some are concave on both sides, others are convex on both sides, others again convex on one side and flat on the other side, some are flat on both sides, some are rough, but all are spherical in outline. Discoidals are found in all parts of Georgia, but more abundantly in northern Georgia. In the southern part of the state they are generally plain. In the mounds and their vicinity the types are generally small. We have seen them not exceeding one-half inch in diameter, perfect specimens, manufactured from the hardest material.

Dr. Snyder has presented illustrations, and there are many found like Figs. 243-9.

SHARPENING STONES, SAWS, ETC.

These are found pretty much everywhere, and do not differ in Georgia from those found elsewhere—large stones with flat surfaces were generally used with sharpening grooves running through the long axis of the stone. Many of them evidence much use. The cutting edge on implements of chist, or any close-grained stone, could be easily reduced with but little labor.

This object (Fig. 564) is very rare, but few being found. They are usually small in form, either triangular or quadrilateral, though we have one oval in outline closely resembling a circular saw. The serrations generally upon one and the longest edge. Some of the large spear-heads and arrow-points when serrated could be used as saws. In the saw proper the serrations are very fine.

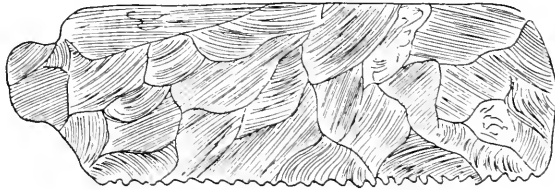


Fig. 564. S. 1-2.

A very fine specimen of Georgia saws. One of the circular saws is shown in Fig. 552. [The engraver should have placed it on the same block with Fig. 564.]

SYNOPSIS OF CERTAIN TYPES.

Objects of shell from their fragile condition are rarely surface-found, being exclusively found in mounds, whether upon the sea coast or the high lands of the state. Mr. Clarence B. Moore secured from the mounds of the Sea Islands of Georgia, more shell objects than were ever found in all other parts of the state combined. In the Etowah mound, located in Bartow Co., Ga., we have found beautiful shell masques, gorgets, upon whose inner surface were representations of the rattlesnake; beads of every form and variety as well as hairpins. Perforated pearl beads were also found there. Some of those have the appearance of beads, yet from their length they may be ornaments.

Not understanding the methods of smelting the mineral, and treating it as a malleable stone, all copper objects were beaten into shape. They are usually found in mounds, or the immediate vicinity of mounds, and seem to have been the handiwork of those people. Objects of copper have been found in Nacoochee valley at the Etowah and Shoulder-bone Creek mounds, also the Hollywood mound and by Mr. Clarence Moore in his exhaustive explorations on the sea coast of Georgia. Axes, beads, gorgets and other fancy forms comprise the objects found.

Hoes are found along the banks of rivers and creeks in the alluvial bottoms where the Indian raised his corn, etc. Some are plain, others notched,

while others are grooved. Their broad cutting edges show constant use and clearly define their purpose as an agricultural tool. Perhaps, the larger chipped flint implements were also used as hoes.

Pestles do not vary in form and general outline from those found in other states of the Union, save in the matter of length. Both bell-shaped and "rollers" are found. A few pestles from upper Georgia reach the length of 24 inches. Some are long, narrow and cylindrical, of the same size the whole length, while others expand at one end, having short handles ; others are simply water-worn pebbles.

Club heads are of peculiar interest, being still in use among the warlike tribes in the north-western portion of the United States. They are made of hard stones, diorite, flint, jasper and sandstone, and are of an ovoidal shape, weighing from six ounces to six pounds. They are attached to a flexible handle and either used by hand or thrown, having a long thong-line attached to them. Some are highly polished with a rudimentary groove around the middle. Some have a well-defined groove, whilst others are plain with no groove ; some are very rude.

We find grooved hammers like Figs. 59 and 69, and also notched pebbles and broken axes used as hammers. Hammer-stones are common and present no variations or new facts. The New England or East Allegheny descriptions would fit the types found here. Hammer-stones have been found which, from their shape, we conclude to have been used as moccasin lasts.

Rubbing-stones are of various forms from rude water-worn pebbles, that have either been flattened artificially or by use, to very fine forms, resembling paper-weights of the present day. They are in great abundance through the length and breadth of the state.

The use of stone tubes it is difficult to determine. Some declare they were used for pumping, others say they were intended for pipes, while again we find them classed with musical instruments. Their varied shape and size would indicate that the larger served one purpose, and the smaller another. The very smallest may have been used as ornaments. They are usually manufactured from the softer stones.

It is reasonable to believe that the very highly finished specimens of stone balls were used in some game where rolling over a smooth surface was necessary, as in the Chungee game or some game akin to it. The rough ones may have been used as sling stones encased in hide attached to a long handle by a thong.

Many objects manufactured from bone are found in the state under the form of beads, awls and ornaments.

Stone and clay beads are found in all parts of the state. Clay beads are generally cylindrical in form and rarely exceed a half an inch in length or a quarter of an inch in diameter. Stone beads are of all shapes,

some resembling small discs with incised lines upon either side, while others resemble in form the larger shell beads.

Fire flints are usually found on village sites and are recognized by the appearance they present of having been struck one against another for the purpose of emitting sparks which caught in tinder or dry leaves, would readily secure fire. Some of the specimens evidence long and severe service.

Notched axes are of great interest, but their appearance does not suggest their use. They were always chipped and manufactured from jasper, flint, or chist; never diorite, serpentine, or sandstone. Perhaps the grooved axe was evolved from the notched axe.

SCRAPERS.

This form is very interesting from many points of view, as almost any flake however rude in form, might easily be converted into a scraper. The series passes from the rudest to the most highly finished objects. Many forms seem to have been made from the bases of broken spear and arrow-points, the broken edge being nicely chipped on either side.

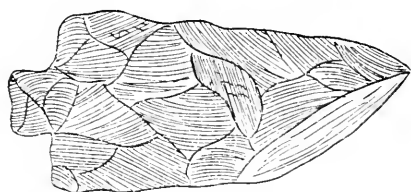


Fig. 565. S. 1-1.

Fig. 565 is a peculiar scraper. The edge is not beveled squarely off as in most scrapers.

A common scraper, shouldered.

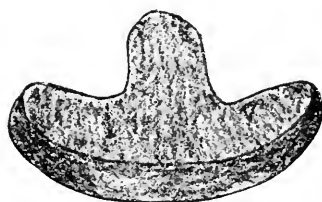


Fig. 566. S. 1-2.



A rude scraper, nearly triangular in shape.

Fig. 567. S. 1-1.

Again, we find specimens in which a long spear or arrow-point, whose extreme point was broken off, has been retouched and converted into a scraper. We frequently find scrapers whose edge is curved enabling it to be used satisfactorily in working objects cylindrical in form, such as axe handles, arrow shafts, etc. The form known as spoon-scrapers similar to the type found in the Swiss Lake dwellings, though not common to Georgia, is sometimes met with. Some forms of scrapers are unique, the scraping edge extending out like barbs from each side.

IdOLS, IMAGES AND PIPES.

Representing the human form, objects of stone and clay have been found in various parts of the state, whether they were objects of devotion as representing some deity or the perpetuation in stone and clay of some hero, is a matter that is beyond solution. Some attain the height of 3 feet, whilst others are small, being from 3 to 8 inches in height. If not a kind of household gods, the little ones were dolls for children, being made of clay. We find many clay images representing birds and beasts as well as the heads of men. What niche they filled in the social or religious conditions is also an enigma.

Pipes may be divided into two classes, those used in state ceremony, known as the Calumet, and those used by the common people in their daily smoke. Every pipe represented the ingenuity and skill, but also the fancy, of its maker. The larger pipes were manufactured from stone representing human beings, animals and birds. Those representing the human being are usually classed as idol pipes. The large majority of the smaller pipes were made of clay, some representing the most grotesque figures. Many long tubes are supposed to have been used as pipes.



Fig. 568. S. 1-2.

Found in Coahina Co., Miss.

The figure is that of a man in a crouching position, the arms bound with twisted ropes and the feet doubled back underneath.

This is one of the rarest pipes in existence.

Pottery image. Davidson County, Tenn.
Doubtless an idol.



Fig. 572. S. 1-3.



Fig. 569. S. 1-3.

Collection of Mr. A. J. Powers, Iowa. Found in Central Georgia. A very fine pipe and exceedingly rare.

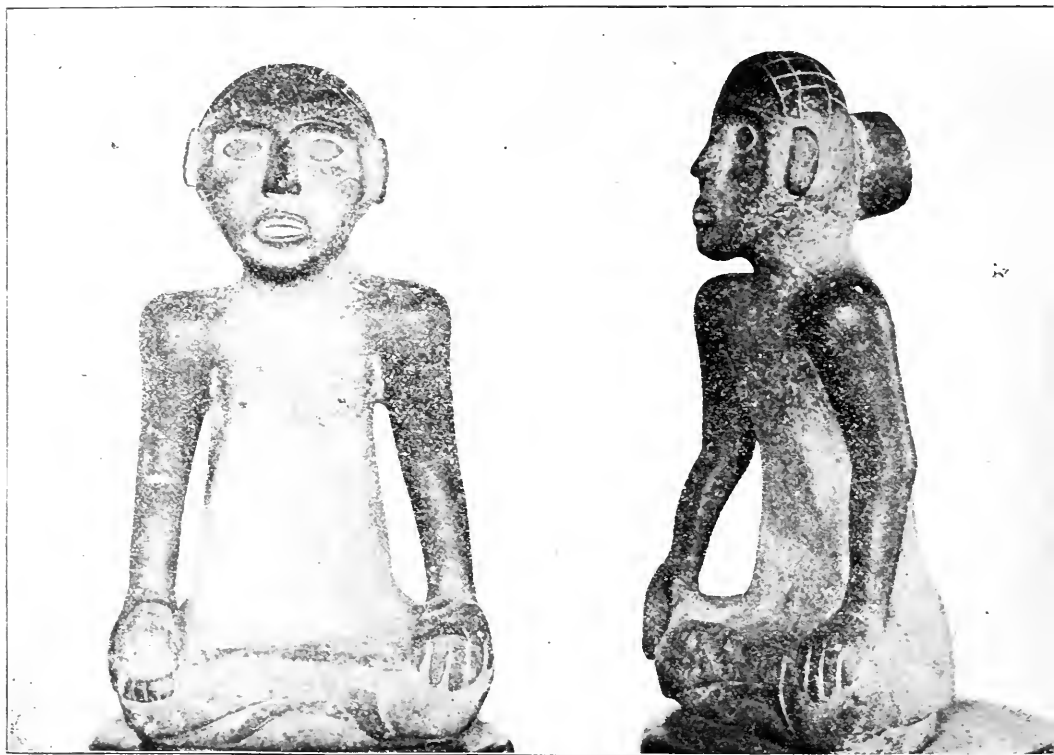
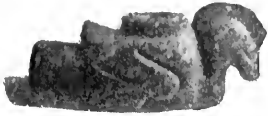


Fig. 571.

Height, 21 inches; weight, 56½ lbs.; material, steatite. Found in '86, near the Etowah group, Cartersville, Ga. Collection of Mr. A. J. Powers, Mt. Vernon, Iowa.



Effigy pipe from Bartow County, Ga.

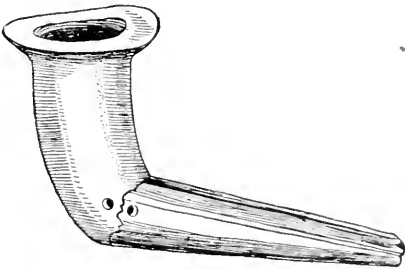
Fig. 570. S. 1-5.

In the report of the Bureau of Ethnology for '90-91, Prof. Cyrus Thomas published his valuable report, *Mound Explorations* for the Bureau of Ethnology. It should be read by all students. We reproduce three of his figures, through courtesy of the Bureau.



Fig. 573. S. 1-1.

In Monroe County, Ark., two large effigy pipes were discovered. They are distinctively southern and not like those of the Ohio Valley or the Lakes. Dr. Thomas says of Fig. 573 that it is of quartzite, partially polished, and represents a kneeling, naked individual.



Stone pipe from North Carolina. Collection of Capt. Richard Wainwright, U. S. N. This pipe has been broken and mended. On each side of the break are two small holes through which thongs were passed and tied.

Fig 574. S. 1-2.



Fig. 575. S. 1-2.

From a mound in Sullivan County, Tenn. It is one of the unusually large pipes peculiar to the south. Dr. Thomas does not give the material.

Fig. 228 and these two are pipes of the same style; broad, flat base, high bowl. We have often wondered, do pipes of a special form characterize a certain tribe? Assuredly, they are confined to localities; therefore, in prehistoric times, may they not have been made by one tribe and traded to another? We do not believe that each tribe manufactured many kinds of pipes.

CUP STONES.

Single or double pitted stones are very common. They in no wise differ from those found in other states, save that in Georgia they are frequently found made of soapstone.

Cup stones seem to have been confined to one locality in Georgia, at the village sites at the mouth of Big Kiokee Creek, Columbia County. There we found in the neighborhood of 1,000 specimens. The cups are generally on both sides, sometimes upon four sides, in masses of rocks hexagonal in shape upon all sides. The cups or depressions vary in number from three to fifteen, and in size from a quarter of an inch in diameter to two inches. In some specimens one side has the cup or depression whilst on the others is a nicely shaped mortar. In one specimen that we sent to the U. S. National Museum the depressions or cups were so large as to resemble small mortars. Some of these cup stones are carefully worked and well finished, while others are but rude blocks of sandstone or soapstone. We think they were used for cracking a number of nuts of various sizes at one time. For instance: Walnuts, hickory nuts, acorns, which would be placed in the cavities suited to their size and all broken at one time with a flail. This method would enable one to accumulate a great number of broken nuts which could be thrown into a pot and boiled; the oil raising to the surface could be skimmed off and used in lieu of butter for culinary purposes as described by Bartram in his *Travels Through the Indian Countries of Georgia* in 1774. That they have been found on the summits of the Hymalaya Mountains, the tops of the Alps and in other elevated spots and remote countries does not preclude their use as simply stones for cracking nuts.

SPEAR-HEADS AND ARROW-POINTS.

Spear-heads and arrow-points—of all prehistoric stone implements the most interesting are the chipped spear-heads and arrow-points. In the description of spear-heads it is difficult to state definitely that this one was a spear-head and that one was an arrow-point.* The larger varieties are generally accepted as spear-heads and the smaller as arrow-points. The largest spear-head ever found in Georgia was taken from a mound at the confluence of the Etowah and Ooestaula rivers.* It measured 14 inches in length, $3\frac{1}{4}$ inches in width, and weighed 2 pounds 2 ounces avoirdupois; was made of flint. Spear-heads rarely exceed 7 inches in length, and even those of that measurement are very rare; the average length is from 3 to 5 inches. Many of the specimens are highly finished and present a very attractive appearance, not only on account of the fine chipping, but also from the variously colored materials from which they were manufactured. Some are long and slender whilst others are short and broad; some are stemmed with short barbs, whilst others have long barbs. Others again are lozenge-shape. Some, from their appearance, would indicate their use as daggers. The material used in their manufacture was flint, quartz, jasper and chist. In this state is found one type of spear-head which differs in form from any found in other states, its width being greater than its length. We have called them fish-spears as they are usually found near rivers. In arrow-points we find every conceivable form, one type merging gradually into another; many unique forms appear, and so irregular in outline that the knife is suggested. As previously stated, it is often difficult to determine where the arrow-point ends and the knife begins. When compared with like forms from other states their superiority in manufacture and delicacy of design is apparent. One reason for the superior excellence of the work lies in the fact that many of the arrow-points are made of the most beautiful colors of flint and jasper; though in some localities, as for instance, Columbia Co., both spear-heads and arrow-points are rudely and roughly made from quartz and chist.

All types found in other parts of the United States are present in Georgia. But there was one type peculiar to Georgia alone, similar specimens having been found nowhere else in the United States, though they appear in England and Denmark. Such as those with long barbs, square at ends, are always made of flint. Bifurcated arrow-points are rare—very narrow thin points about 2 inches in length are common.

There is one type unsymmetric in form with the upper edge bevelled, which, though stemmed as an arrow-point, would suggest the knife.

Arrow-points with bevelled edges are numerous in the middle portion of the state and closely resemble those found in the state of Ohio, many are not only bevelled, but serrated also. The most beautiful specimens are of

*Col. C. C. Jones's Antiquities of Southern Indians.

the triangular type, some attaining a length of 4 inches.* Arrow points made of pellucid crystals are also frequently met with. Under the head of spear-heads and arrow-points we will describe a long slender object similar to the flint blades found in California, though not so long, rarely exceeding 5 inches. To all appearances they resemble the California type very closely and are always made of flint.

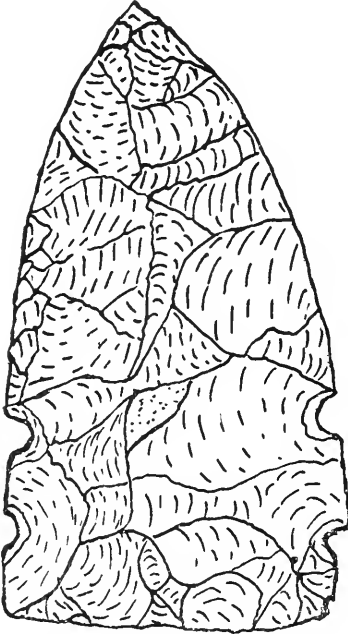


Fig. 576. S. 1-2.

Spear-head from Frierson, La. Unusual, having two notches (for fastening) on each side. It is a triangular form, notched. Quite rare.

This spear-head is a typical Georgia form.
(All flint implements, not otherwise specified,
are from Dr. Steiner's collection. W. K. M.)

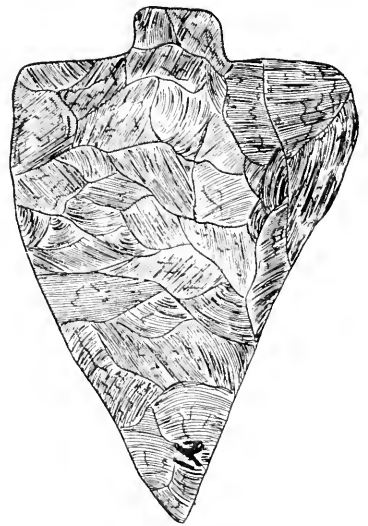


Fig. 577. S. 1-2.

*Many of the triangular specimens are serrated.



Fig. 578. S. 1-2.



Fig. 579. S. 1-2.

Forms of slender, shouldered spear-heads.
Material, chert.



Fig. 580. Lawrence County, Ohio.

"Very thin; well worked; usually quite symmetrical; base straight or slightly concave; stem expanding by curved lines, with shoulders or barbs; base with sharp tangs. Some specimens are quite slender, others almost as wide as long. Few are above two inches in length. The edge is sometimes a broken line instead of a regular curve."*

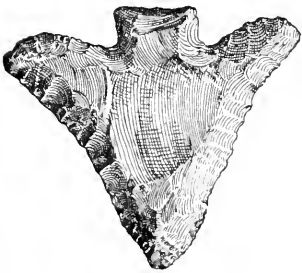


Fig. 582.

Fig. 582 is somewhat like Fig. 584 of Dr. Steiner's collection, only that the barbs are broader and are expanded.

This form is only found in the South and rarely out of the Georgia-Mississippi-N.-Carolina region. They range from half this size to 4 by 5 inches and are nearly as broad as long. Why were they made in such a strange form?

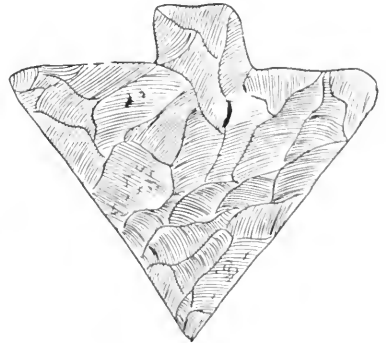


Fig. 583. S. 1-2.

*Stone Age; Gerard Fowke; p. 160.

Fig. 581 is from Savahana Valley. Very peculiar specimen. The edges are doubly chipped. This typical of Georgia.



Fig. 581. S. 1-1.

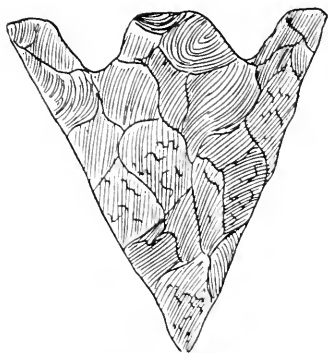


Fig. 584. S. 1-2.

Peculiar to the South. Shouldered ends of barbs squared, sides converging straight down to the point. Found in all sizes—usually of chert, jasper, etc.



Fig. 585. S. 1-1.

A triangular indentation in the base. Peculiar form. Chiefly confined to the South.

Indented at base and shouldered. Not so well chipped as some other forms.

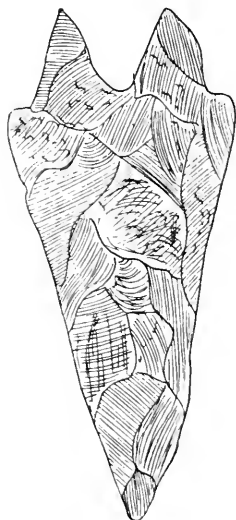
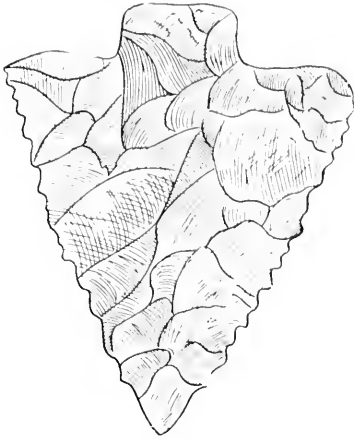


Fig. 586 S. 1-1.



Shouldered, serrated spear head.

Fig. 587. S. 1-2.

Spear-head serrated along the upper part. An unusual form, not found North.



Fig. 588. S. 1-1.



War-point.

Fig. 589. S. 1-1.

Common arrow-head.



Fig. 590. S. 1-2



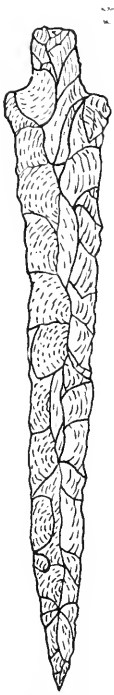
Rotary arrow-head.

Fig. 591. S. 1-2.

From Frierson, La. Quite peculiar.
Has one barb been broken?



Fig. 592. S. 1-2.



Long, slender spear or lance head—very fine. Quite a number of such are found in Louisiana. This object is in Messrs. Frierson Bros.' collection; Frierson, La.

Fig. 593. S. 1-2.



Possibly a knife, perhaps a drill. Common on village sites.

Fig. 594. S. 1-1.

A little perforator having a sharp point. It was made into an arrow-head first. Then the point was chipped down to its present needle-like form.



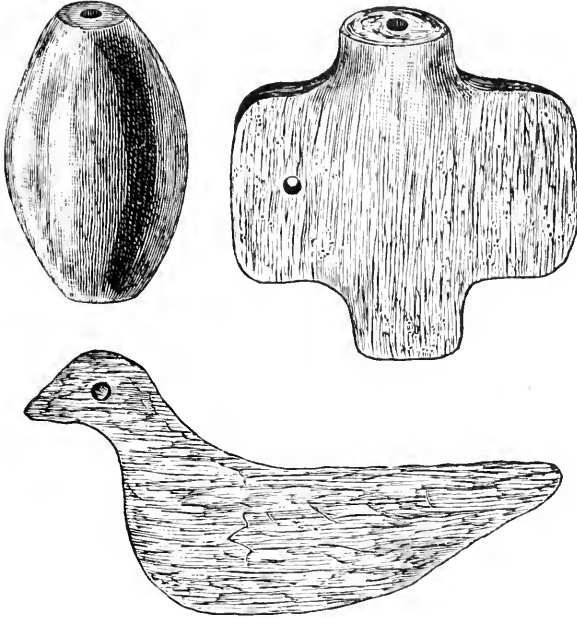
Fig. 595. S. 1-1.

Leaf-shaped implements are found in all parts of the world, and though not rare, they are by no means plentiful in Georgia. Their use is a matter of conjecture. We feel that in classing the smaller and medium sizes as knives, we are not in error. The larger and ruder forms answered, perhaps, for the heads of war clubs, their shape and finish indicates use, but their edges or points show no indication of wear. It is evident, from their shape, that if they were not incomplete implements, they were used as some kind of cutting tools.

Under the head of miscellaneous or odd forms are found many beautiful specimens of handiwork in stone, which it is impossible to classify either as an ornament or an implement, yet the highly finished workmanship leaves no doubt in the mind that they occupied an important part in the domestic, festive, or warlike pursuits of life, and were held in high esteem by their possessors.

CEREMONIALS AND PENDANTS OF STONE.

The form, the character of the stone used, the perforation, or perforations, or slight groove, or notch around the head or smaller extremity, clearly suggests the use of these objects. In some instances we meet with these pendants broken but not discarded, a new perforation rendering the pendant as useful as ever. We frequently find them with incised lines cut upon one or both sides, which, perhaps, was a chronicle of an event of the life of the possessor. They must have been held in high esteem as many are artistically made.



The large bead, the ceremonial and the bird effigy are characteristic Georgia stone ornaments.

Fig. 596. S. 1-1.

The "spade-shaped" ceremonial, shown in Fig. 237, pg. 159, is found in the South and Mr. Moore, Col. Jones, Prof. Holmes, etc., figure them. In excavating the Etowah group we found one 24 inches long, of green serpentine.

Ordinary slate ornaments or tablets common in the North, are very rare.

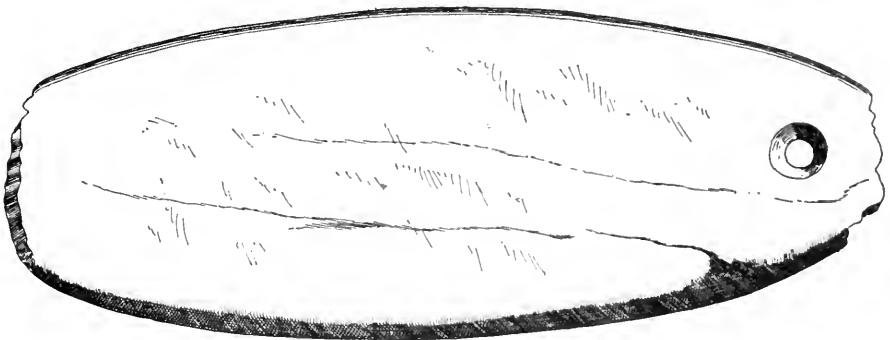


Fig. 597. S. 1-1.

Stone gorget from mound at Mt. Royal, on the St. John's River, Florida. A simple form of ornament common south. We are indebted to Mr. C. B. Moore for the loan of this figure.

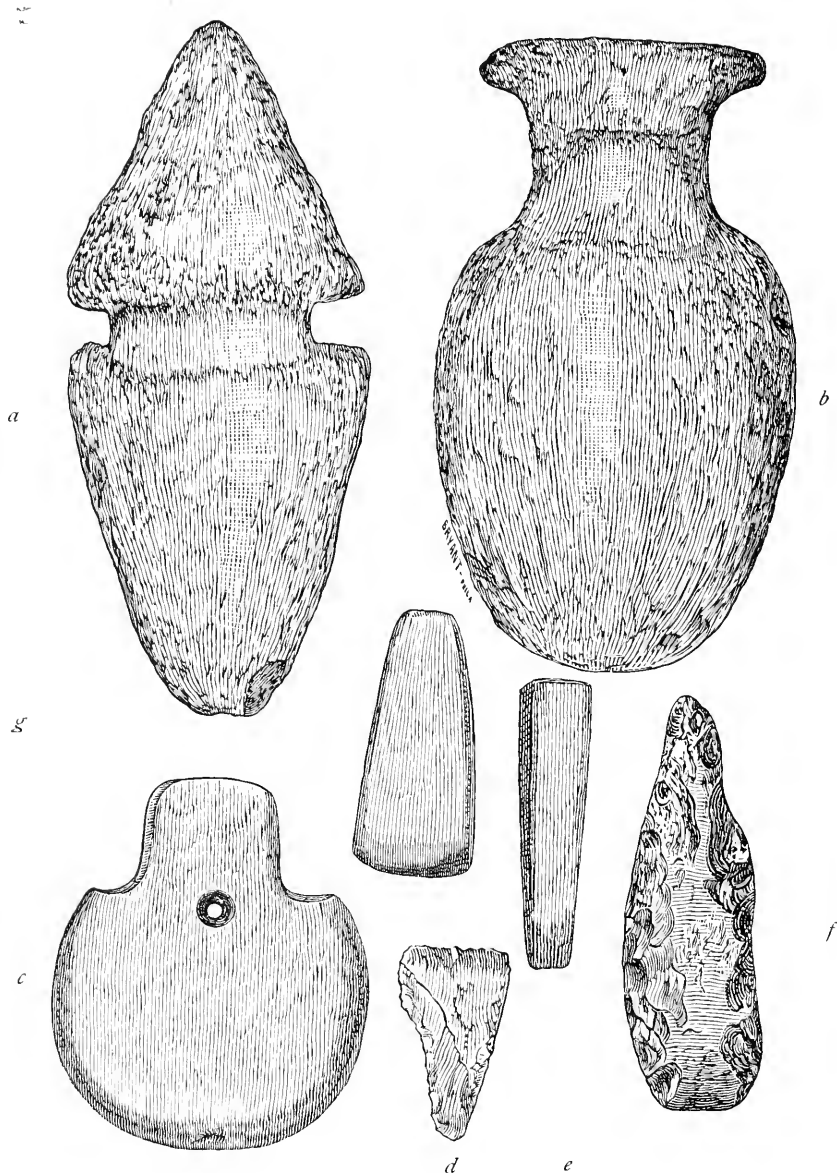


Fig. 598. S. 1-2.

- a. Axe grooved in center and pointed at each end.
- b. Axe with broad blade, sides gracefully curved and T shaped top.
- c. Unknown.
- Opposite *g* in the center, a small wedge shaped celt, common in the South.
- f. A flint celt or chisel.
- e. A narrow chisel peculiar to the South.
- d. A flint celt concave on one side.

Though *c* is made of serpentine, it has a cutting edge it might be classified as a knife, but the absence of all wear upon the edge and being perforated would indicate that it was used as an ornament. It is about 5 inches long, the blade about 4 inches wide. It is spade-shaped, the spade portion about 4 inches long with a handle an inch long. It is perforated just below the junction of the handle with the blade. This form is found in the upper portions of the state.

Fig. 599 is a grooved plummet from a mound near Catahoula Parish, La.

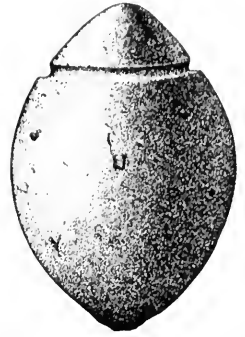


Fig. 599. S. 1-1.

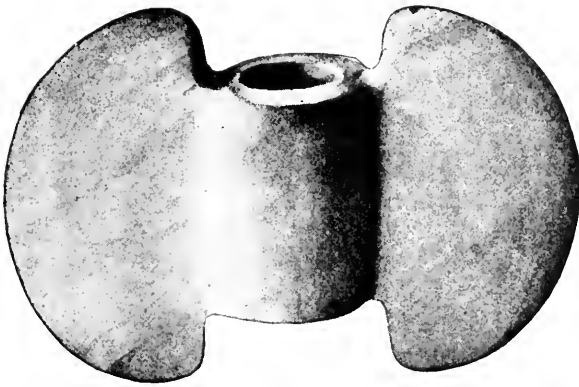


Fig. 600. S. 1-1.

Fig. 600 is a typical butterfly ceremonial. Material, pagodite. Rhea County, Tenn.

It is interesting to note that most of the ceremonials illustrated by Mr. Fowke are from the South or Middle South.

POLISHED STONE HATCHETS*, CHIPPED HATCHETS, ETC.

Polished hatchets are found in about the same proportion as grooved axes. Though much more frequent in the northern portion of Georgia, they are not entirely absent in the southern portion. The material used in their manufacture was the same as in grooved axes. Some forms differ from those found in other states in the Union. In many sections of the southern portion of the state where polished hatchets are not found, we find those that are chipped supplying their place. When chipped they are made of flint, jasper or chist. Some are simply rough irregular masses that are brought to a cutting edge. Their length was from 2 to 14 inches, width from 1 to 3 inches. Some closely resemble the iron wedge of the present

*Commonly called celts.

day, while others expanding at the cutting wedge, presented a fan-like appearance, and some are perforated as if for suspension. Other hatchets are not polished, but are well chipped; the cutting edge seems by use or art slightly polished. I met with several beautiful specimens of black chert in excavating at the Etowah mounds, Ga. As diorite and serpentine were not present in many parts of Georgia, other materials were used in the manufacture of hatchets, as they could be chipped in a way to enable them to be easily handled or hafted. Unpolished, chipped hatchets supplemented the want of polished hatchets.

Chisels, though frequently found, are by no means common and differ from polished hatchets only in the matter of size, some being 1 inch long and $\frac{1}{2}$ inch wide, the extremest length rarely exceeding 4 inches. They are manufactured from every variety of material from diorite to quartz.

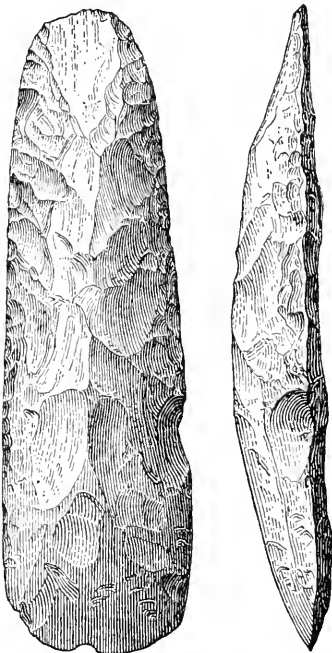


Fig. 601. S. 1-2.

Fig. 601 is a curved celt of brown flint from a grave in Alexander County, Ill.

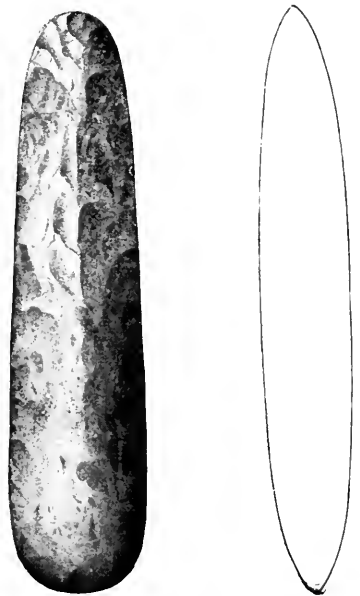


Fig. 602 is a beautiful flint celt from Benton County, Tenn. Very highly polished.

Fig. 602. S. 1 2.

POTTERY.

In the ceramic art the aboriginies of Georgia were skilled. The pots varied in capacity from half a pint to five gallons, though the inner surface was always plain the exterior was covered with various fanciful designs. In many there were holes for suspension, others had handles representing human, bird or animal figures. The exterior ornamentation was the result of impressions made while the clay was in a plastic state with matting, cords, or sharp pointed implements. Many had the shape of our iron pots to-day, while others resembled dishes. Those having what is known as the geometric markings, or lines, are usually found in mounds. Under the head of pots we find a vessel known as the burial urn. Mr. Clarence Moore illustrates many forms from the mounds of the Sea Coast Islands of Georgia.* But they are by no means confined to the Sea Islands but are found in all parts of the state.

Prof. W. H. Holmes's paper on American Pottery of the Mississippi Valley was published in the Fourth Annual Report of the Bureau of Ethnology, ('82-83). Some of the specimens figured in his able report are different from those presented in the Middle South section.



Fig. 603. S. 1-3. Arkansas Mound.

Prof. Holmes says of this specimen (on page 388): "The vessel shown in Fig. 603 is one of the most unique yet brought to light. It is a heavy, rather rudely finished bowl, to the rim of which two grotesque heads, apparently of nondescript character, have been attached. One resembles the oft-occurring plumed serpent of aboriginal American art in a number of its characters. The other has a double comb resembling somewhat that of a domestic fowl. No description can convey as clear a conception of these monstrosities as the accompanying illustration."

*Georgia Explorations. Clarence B. Moore, Philadelphia Academy of Sciences, '99.



Fig. 604. S. 13. Arkansas burial place.

"The vessel depicted in Fig. 550 has a number of noteworthy features. In shape it resembles the preceding with the exception of the legs, which are flat and have stepped or terraced margins. The whole surface of the vessel is decorated with characteristic designs in red and white upon a warm gray ground. A stepped figure, resembling the Pueblo emblematic 'rim of the sky,' encircles the neck, and semi circular figures in white appear on opposite sides at the top and base. The body is covered with scroll work in broad red lines, the spaces being filled in with white in the form of a thick earthy paste. Each of the legs has one-half red and the other white."



Fig. 605. S. 1-3. Arkansas burial place.

We are indebted to the Bureau of American Ethnology for permission to make some twenty-five or thirty electrotypes from government plates. This permission was secured through the courtesy of Professor W. J. McGee, Ethnologist in Charge. Professor Holmes says of Fig. 605, that it resembles a "female deer or fawn." The tail is pendant, as in nature and not curled as on most of the effigy pottery. The legs terminate beneath the body in cloven hoofs.

APPENDIX.

INFORMATION ON VARIOUS SUBJECTS.

A comparison of California and Southwest artifacts, and, again, a farther comparison as between them and those of the Mississippi Valley is interesting.

That Southern California culture was influenced to any extent by trade with the Cliff Dweller and Pueblo country, I am not prepared to admit. That the shell objects bear more or less resemblance to each other, we will at once grant. Mortars, metates, mano stones, long pestles (rollers) must needs be the same everywhere, just as triangular or "war" arrow-heads must of necessity be alike. But note the dissimilarities. In the Southwest the projectile points and knives are small. They are neither as numerous nor as large as on the Coast. The Coast is peculiar because it lacks pottery. The Southwest is famous for its ceramic art. Grooved axes are common in the land of the Pueblo; they are wanting in California. And so, one might go on giving differences.

Now, as to the Southwest and the East, California and the South. Greater variations in types could scarcely be imagined. After stating that axes, hammer-stones, rollers, etc., are as types in other localities, what have the four regions in common? Very little. One might be safe in stating as a general proposition that California and the Southwest stand apart, separate, unique from the rest of the country.

It is certain that the arid region in which these tribes lived greatly altered and modified their modes of life. Doubtless any of the Eastern or Southern tribes living under similar conditions would exhibit the same peculiarities. There is less similarity between California and Arizona forms than between Ohio and Georgia artifacts. Yet the climates of the Southwest and Southern California are identical. The differences in specimens are not easily explained unless one takes this view:

Being near the Coast, with a greater rainfall, and also nearer mountains the California tribes were not so dependent upon irrigation. They procured food more easily. Game was more abundant, also roots, herbs, nuts, etc. The desert folk of the Colorado Valley were compelled to struggle for an existence. As it happens in all ages and among all tribes of men, their continual strife with adverse conditions developed the mind, stimulated invention and culminated in a culture, which was, just prior to the Spanish discovery, higher than that found elsewhere north of Mexico. It is no exaggeration to place the Cliff and Pueblo peoples above all others. The first rude wall built, the primitive, irrigating ditch, the coarse cloth of the experimental weaver—all these were beginnings of what later came to be arts. And we can trace the evolution of ideas in many places in the Southwest. It is through hardship and failure that man progresses. Had the Pueblo and Cliff people been surrounded by herds of

bison, were fruits and nuts in abundance, we would to-day have no great compartment houses, of 600 rooms no towers no ruin-groups for study.

The objects from the Southwest, except the effigies and unknown stones, are mostly practical. The ornamental and ceremonial class is not so numerous as in the East. Rubbing or grinding stones predominate above all others and these, taken with the long irrigating ditches and other evidences, lead us to conclude that the desert people were serious, industrious folk. They might have set the roving Indian bands of 200 years ago a worthy example.

While the tribes, taken altogether, were above the Mound building folk in culture status; yet an archaeologist who gauged a people solely by their weapons, ornaments or utensils might dispute the position accorded the Southwest tribes. Ignoring the points, agriculture, architecture, textile fabrics, etc., two tables might be prepared which present the relative excellence in stone and clay, bone and shell objects.

MOUND BUILDING TRIBES.

Grooved Axes,
Pestles,
Slate Ornaments,
do ceremonials,
Pipes,
Copper objects,
Hematite objects,
Bone objects,
Flint objects.

PUEBLO TRIBES.

Pottery,
Mortars,
Shell work,
Turquoise objects,
Unknown objects,
Effigies (stone).

It will be seen that in art forms alone, the Mound building tribes excelled.

SLATE TABLETS AND ARROWS OF PRIMITIVE INDIANS.

"Of the tablets you speak of, I have seen several, but the holes were much larger than those you describe. Those that I have seen were used by the Indians for grooving the shafts of their arrows. All arrows of the primitive Indians are found with three grooves from the arrow's shoulder, at the fluke, extending to and conducting the air between the feathers to give them steadiness. These grooves, on close examination, are found to be indented by pressure, and not in any way cut out; and this pressure is produced, while forcing the arrow, softened by steam, through a hole in the tablet, with the incisor of a bear set firmly in a handle and projecting over the rim of the hole as the arrow-shaft is forced downward through the tablet, getting compactness, and on the surface and in the groove a smoothness, which no cutting, filing or scraping can produce. It would be useless to pass the bow-string through the tablet, for the evenness and hardness of the strings are produced more easily and effectually by rolling them, as they do, between two flat stones while saturated with heated glue."*

*From a letter to Charles Rau from Mr. George Catlin, an extract of which was reproduced in the Annual Report of the Board of Regents of the Smithsonian Institution of 1872, page 363-4. Date of letter December 24th, 1871.

FIRE MAKING APPARATUS.*

"The bow is used by individuals in boring holes. It is presumed that its use as a fire-making tool is secondary, the cord and handles being the older. The difficulty of making fire is greatly increased when one man attempts to make it with the compound drill at the critical moment the dust will fail to ignite; besides, there is no need of one man making fire; a thing that is for the common good will be shared by all. Hence, the cord with the handles, which usually requires that two men should work at the drill is as a rule used by the Eskimo.

"Though the Sioux, and some other North American tribes, made use of the bow to increase the speed of the drill, they did not use the thong with handles, nor was the bow common even in the tribes of the Sionan stock that had attained to its use (see remarks p. 549). The bow may be termed a more advanced invention, allowing one man with ease to bore holes."

THE METHODS OF FIRE-MAKING.†

"All mechanical methods of generating fire take advantage of the law that motion, apparently destroyed by friction, is converted into heat. These methods can be grouped under three classes, namely: (1) Wood friction; (2) percussion of minerals; and (3) compression of air.

"Three other methods exhaust the entire range of usages in fire-making, and they are with one exception, perhaps, recent. These may be arranged in the following classes: (4) chemical; (5) optical; (6) electrical; but these are also the exhibition of friction in its higher manifestations.

FRICTION ON WOOD.

"There are three well-defined variations in the method of making fire artificially by friction on wood, namely: (1) By twirling or reciprocating motion; (2) by sawing; (3) by plowing.

"A shallow depression is first made near the edge of the hearth in order to give the spindle 'bite.' From this depression a slot is cut down the side of the hearth as a duct for the wood debris which has been ground off. The operator then takes the spindle by its upper end between the palms of his hands and inserts the lower end in the shallow depression. In twirling, a strong downward pressure is given to the spindle. The hands, which necessarily move down through the combined pressure and the back and forward motion, must be returned quickly to the top of the spindle without allowing the air to get under the lower end of the latter. After continued friction, evidences of combustion are seen in the ground off

*Walter Hough, *Miscellaneous Reports on Anthropological subjects*, p. 556.

†United States National Museum, *Smithsonian Report for 1890*, page 395.

Walter Hough, *Department of Ethnology*, U. S. National Museum.

wood meal. In shaping the lower end of the spindle, it is absolutely necessary that its point should be in contact with the bottom of the shallow depression, otherwise it will "bind" against the edges of the depression and defeat the object.

"CORD AND BOW FOUR-PART DRILLS.

"Several improvements of the simple drill have been made by savage inventors. These improvements are shown in the cord drill, the bow, or mouth-drill, and the pump-drill. The first is used by the Eskimo, by some tribes of North American Indians, and by Dyak tribes. It adds to the spindle of the simple drill an upper bearing, called a hand-rest, and it revolves the spindle by a cord with handles alternately pulled. Two men are required to work this drill."

NOTES ON THE MANUFACTURE AND DECORATION OF POTTERY.

Readers are doubtless familiar with some of the several articles dealing with the manufacture of pottery. They know that the clay is carefully selected, made plastic by kneading and rolling; that it is mixed with pounded granite or mussel shells to temper it and give it sufficient consistency; that it is moulded about a gourd, boulder, basket or other object, or that it may be moulded within a basket or open receptacle, etc. Then it is burned.

Professor F. H. Cushing made frequent experiments in his efforts to understand how the larger vessels and bowls were made. His observations are interesting and worthy of reproduction here.

THE GERM OF SHORE-LAND POTTERY.*

"With the latter I made a pot shaped pit like those I had discovered the faint remains of, rubbing thick clay-water around its perimeter to make the bottom and sides firmer, and keep the vertical portions from caving in. I allowed this form to dry. In the course of only two or three hours it had become comparatively hard. I then mixed clay-paste with which to form, inside of the pit, the walls of a vessel. Whilst the bottom and the lowermost portion of the sides of an incipient vessel could thus be formed with great ease, I soon found that it was nearly impossible to cause the thin wall of clay to adhere and thus retain its position higher up. It then first occurred to me that strips of bark, or fiber, or netting, might be pressed into the pit and used not only to hold the clay in place around its sides whilst being built up, but also to aid in lifting the green vessel out when fashioned, for drying. I therefore roughly netted together some coarse cordage in the form of a bag of suitable size and introduced this into the pit. The first experiment made proved a failure. When I had built up the clay nearly to the margin of the form, its sides collapsed inward, netted cordage and all. Again I proceeded as before, this time, however, weighting the edge strings of the bag down to the surrounding surface with rocks. I succeeded perfectly

*The Inter-National Congress of Anthropology, page 220. Frank Hamilton Cushing.

in fashioning the vessel ; but, on endeavoring to draw it out, found, of course, that it would be necessary to lift evenly on all the edge-strings, else the still soft vessel would give way or at best be utterly distorted when taken out of its mould, by the unequal strain of the strings. It very quickly occurred to me that these difficulties could be overcome by attaching the strings to a hoop, then lifting the vessel out by means of that. Following this plan, I succeeded completely.

"Thus exposed, it set within an hour or two, becoming so firm that I successfully removed, by a sort of gradual peeling-off process, as one takes off a tight glove, the netted bag in which it had been suspended. After it had been slightly dressed down and welded where necessary by more scraping inside and out, with clam-shells, I was surprised and delighted to find that its general surface presented almost the exact appearance of the outer surfaces of the shreds I had been finding, save that the textile impressions were coarser in my specimen than in the ancient ones."

Professor Holmes in "Studies in Aboriginal Decorative Art," describes what he considers some of the finest pottery of American aboriginal make.

STAMPED ORNAMENT OF SOUTH APPALACHIAN EARTHENWARE.*

"One of the most marked and interesting varieties of earthenware found within the limits of the Atlantic drainage is distributed very generally over contiguous portions of Georgia, North and South Carolina, Alabama and Tennessee. It is found also, to some extent, in Florida. For convenience of designation I have called it the South Appalachian group of ware. The finest specimens come from the valley of the Savannah. Along the Gulf and Atlantic coasts these wares are intermingled with other forms of pottery, which, as a rule, are of inferior quality.

DECORATION.

"As already mentioned, the remarkable style of decoration, more than any other feature, characterizes this pottery. Figured stamps were rarely used elsewhere, save in Central and South America, and the stamps employed in this instance do not appear to have possessed much diversity of design. The exact form of the stamp or die is of course not easily determined, as the imprint upon the rounded surface of the vases represents usually only the middle portion of the figured surface of the implement. There can be but little doubt, however, that the stamp had a handle, and therefore assumed the shape of a paddle, as do the stamps used by the Cherokees at the present time.

"The lines vary from 3 to 10 to an inch, and when covering the surface of a vessel give a hatched or checkered effect, closely resembling that made by imprinting a coarse open fabric. These figures are often attributed to the modeling of the vessel in a basket, but close examination shows that the figures are arranged in small groups which do not coincide upon the edges where the impressions overlap, and that the arrangement of parts is not that of woven strands.

*The American Anthropologist: Vol. V. Jan., 1892. Page 67.

THE ROCKING STAMP OR ROULETTE IN POTTERY DECORATIONS.*

"The use of the stamp or figured paddle in pottery decoration, reviewed at some length in the January number of *The Anthropologist*, was not confined exclusively to the South Appalachian region. A somewhat poorly defined group of ware, not differing greatly in any respect from the Appalachian pottery, and decorated like that ware with stamps, is found in a few limited districts in Ohio, Indiana, and Illinois, the best and most numerous examples coming from the vicinity of Naples, Scott county, Illinois.

"The stamps or dies were not applied to the entire surface of the vessel, as were the paddle stamps of the south, the impressions being independent of each other and separated by short intervals, producing a diaper effect within certain spaces or encircling the vase in zones.

"These stamped specimens are referred to in this place, rather than in connection with the Appalachian stamped ware in the preceding paper, on account of their close relations with another group of pottery ornamented with a roulette or rocking stamp, illustrations of which are given in the Fourth Annual Report of the Bureau of Ethnology. This interesting relationship, heretofore unobserved, may readily be made apparent."

EARTHENWARE VESSELS WITH BOTTOM KNOCKED OUT.*

"For the benefit of those not familiar with our previous Reports on the Florida mounds, we may say that it was the custom in that State often to knock out the bottom, or to make a hole through the bottom, of earthenware vessels, previous to inhumation with the dead and that this custom is believed to have been practised with the idea that the mutilation 'killed' the vessel, freeing its soul to accompany that of its owner into the next world. Apparently, however, it entered the minds of the more thrifty among the aborigines that vessels of value might serve a better purpose, and hence there arose a class of ceremonial ware, usually small in size, often of fantastic design and always of flimsy material, with bases perforated during the process of manufacture. This cheap ware was probably kept on hand and did duty for vessels more valuable and less readily spared."

ADDITIONAL INFORMATION CONCERNING FIG. 619.

Mr. W. C. Herriman, of Hamilton, Ontario, sends me 3 new photographs of Fig. 619 (see page 417). He thinks the head-dress is particularly interesting; "it being very much like the French capot, and suggests the period of early racial contact (?)."

It was found in Victoria County, Ontario, and is made of "the ordinary clay material." The head is hollow—whether by accident or intent Mr. Herriman does not know—as it rattles distinctly on being shaken, there being, apparently, 2 or more loose particles inside. Height, 5 3-16; from front to back, 2 7-8 inches.

In the South pottery heads containing pebbles or balls of clay are common. They were used both by children and adults, though in the former case they served merely as toys.

**The American Anthropologist*, Vol. V, April, 1892. Pages 149-150.

†Mound Investigation on the East Coast of Florida. Clarence B. Moore, 1896. Page 8.

SECTION XIII.

THE MANUFACTURE OF FLINT AND CHERT IMPLEMENTS.

"The discussion of flaked implements comprehends a study of all that pertains to the procuring of flakable stone by means of search, collection, and quarrying, and of everything pertaining to the manufacture of implements by fracture, as in breaking and in flaking or chipping by percussion or pressure; it includes also a classification and descriptive presentation of the finished product and a reference to their respective implements."*

The above initial proposition by Professor Holmes is applicable to the manufacture of flint implements either locally or generally. It is fortunate that the sites described in his paper were all near Washington, otherwise it would not have been possible for them to have received such detailed and personal study and investigation. In this brief section I shall quote Professor Holmes, and from Mr. Fowke's various papers, notably his observations on Flint Ridge; also Mr. J. D. McGuire's articles in the *American Anthropologist*; Observations on Stone Chipping, George E. Sellers, and various remarks by Catlin, Cushing, Snyder, Wilson, Rau, etc.

Material for knives, scrapers, drills, projectile points and what-not was obtained from two sources. First, quarries; second, from boulders or nodules.

As is naturally inferred, different methods were followed. It is vastly more difficult to open shafts in ledges of chert, flint, etc., than to dig out argillite, quartzite or other boulders numerous in gravel, sand or clay deposits of the North Atlantic region, the South, and sections of Tennessee, etc.

In argillite, quartzite and other boulder materials the first step, after their removal from the bed by the quarrymen, was to test them for quality of material.† The removal of one or two flakes enabled the expert workman to determine whether or not the stone was reasonably tractable.‡ The selected material was removed to the shop sites, where the flaker took up the work.

"The process employed in flaking appears to have been exclusively fracture by free hand percussion, the act being a quick, firm stroke, regulated in force by the nature of the resistance to be overcome and by the result desired." The stones being of all sizes and varying degrees of toughness no

*Stone implements of the Potomac-Chesapeake Tide-water Province, Prof. W. H. Holmes, Bureau of Ethnology Rep. '93-4; Page 29.

†Adopted from Prof. Holmes' paper with slight alterations.

‡In Observations on Stone Chipping, by Geo. E. Sellers, (Smithsonian Rep. '85) he mentions an interview with Catlin. "He, (Catlin) considered making flakes much more of an art than the shaping of them into arrow or spear-points, for a thorough knowledge of the nature of the stone to be flaked was essential, as a slight difference in its quality necessitated a totally different mode of treatment."

uniform method of reduction could be employed. The workman suited his blows as to direction or intensity to the nature of the pebble.

"Grasping a bowlder in either hand (supposing bowlder hammers to have been used), the first movement was to strike the edge of one against that of the other, at the proper angle to detach a flake. The second movement and the third were similar and so on until the circuit was completed. If no false stroke was made and the stone had the right fracture, few blows, occupying but as many seconds, gave as a result a typical turtleback—a bowlder with one side faceted by artificial flaking, the other side, save through accident, remaining smooth. If the removal of a single row of flakes was not sufficient, the work was continued until the one side was reduced to the proper degree of convexity, and the availability of the stone for further elaboration was made apparent."

The stone was then turned and the opposite, or smooth side, flaked away, leaving a two-faced turtleback of common form. In Figs. 606-7 two typical turtlebacks from Massachusetts are shown.

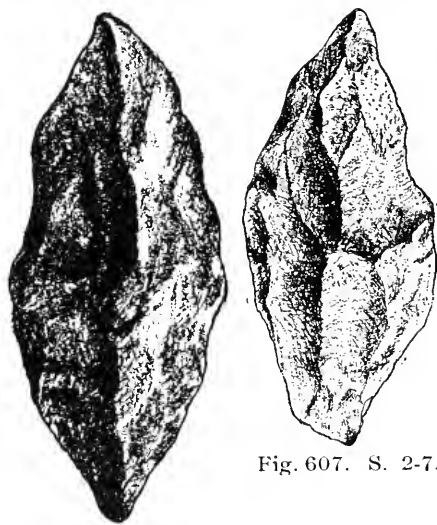


Fig. 607. S. 2-7.

Fig. 606. S. 2-7.

Two unfinished argillite implements called by some archaeologist, "Paleoliths", from near Millbury, Mass. Collection of Mr. C. A. Geer, to whom I am indebted for descriptions and drawings.

I have purposely avoided a discussion of paleoliths and glacial man. This book is confined to a description of undisputed artifacts, etc. No one is more ready to welcome discoveries tending to prove the very great antiquity of man than I am, but the field experience of those who have been longest out and who are *really* working archaeologists is, I think, fairly against the proposition. If Fowke, Holmes, Smith, Dorsey, Thruston, Lewis, Mercer, Moore, Seever, all the field assistants, and others have not found, or cannot find them in their extensive travels and diggings, and if the burden of proof is to rest upon one implement found by workmen in a cellar and another pulled out of a railroad gravel bank by a strolling collector, it seems to me that we have been hasty in heralding the "discovery." Mr. Ernest Volk, at Trenton, has done the most and best work of those who are "strong in paleolithic faith." He finds scores of rude implements. But Holmes, Salisbury, Chamberlain, McGee

and quite a few geologists and archaeologists of reputation contend that the deposit is not glacial—or rather that part in which the implements are found is not of glacial antiquity. Moreover, they are near the surface.

I know nothing of geology and depend solely upon the testimony of those who are skilled in that science. But I am able to recognize chipped objects when I see them in earth, gravel or elsewhere. In all my travels I have never found one imbedded in strata of any kind, and I have tramped, or driven along the foot of terrace bluffs where gravel was exposed, and rowed by gravel banks of the larger streams in Ohio and Indiana in a vain search for them. On those occasions I determined, in case of a find, to place a guard over the spot and leave the specimens *in situ* until competent geologists and archaeologists arrived. The finders of the several paleoliths under dispute made serious errors when they removed them. At the Hopewell Group, when our survey made those remarkable copper, pearl and obsidian discoveries we took no chances but sent telegrams to prominent persons in archaeologic circles, guarded the finds over night and removed the copper plates, effigies, blades and what-not in the presence of many witnesses. There was *never* a question as to the authenticity of the Hopewell collection. All arguments would be forestalled if paleoliths were left *in situ* until examined by others than the finders. While I do not say that glacial man did *not* exist in America, yet I am convinced that the preponderance of evidence *to date* is *negative*.

Larger blades, the final quarry-site stage, are of such shapes as are shown in Fig. 91, the large obsidian blade in Fig. 55 and the outlines around points in Fig. 608.

It is thought that the final work was not done on the quarry-site. This is especially true of boulder deposit quarries, but at Flint Ridge (Ohio) quarries there is some evidence that points, knives, drills, etc., were completed there. I do not think that the "finishing" was extensive. It must be remembered that Prof. Holmes writes of the Potomac region when he says: "Now, although the blades produced in the quarry-shops may, without modification, have been used for cutting, scraping, perforating and other purposes, I am decidedly of the opinion that as a rule they were intended for further elaboration; this is rendered almost certain, first, by the fact that the most fully shaped broken pieces found on the quarry-shop sites are but rudely trimmed on points and edges, specimens of like grade being little fitted for use in cutting and scraping; and, second, that all the tens of thousands of specialized forms—spear-heads, arrow-points, and perforators—are necessarily specialized from such blades, as shown in a subsequent section. The quarry workshop was naturally not a place for finishing tools, but one for roughing-out the material and selecting that fitted to be carried away for final shaping. A laborer engaged in such work in a pit in the forest would not be likely to throw aside the rough hammer used in fracturing cobble stones to take up and operate an entirely different kind of machinery, involving a distinct and delicate process. Being a reasoning and practical creature, he would carry away the roughed-out tools the long, thin blades, to be disposed of or to be finished at his leisure and by whatsoever method experience placed at his disposal."

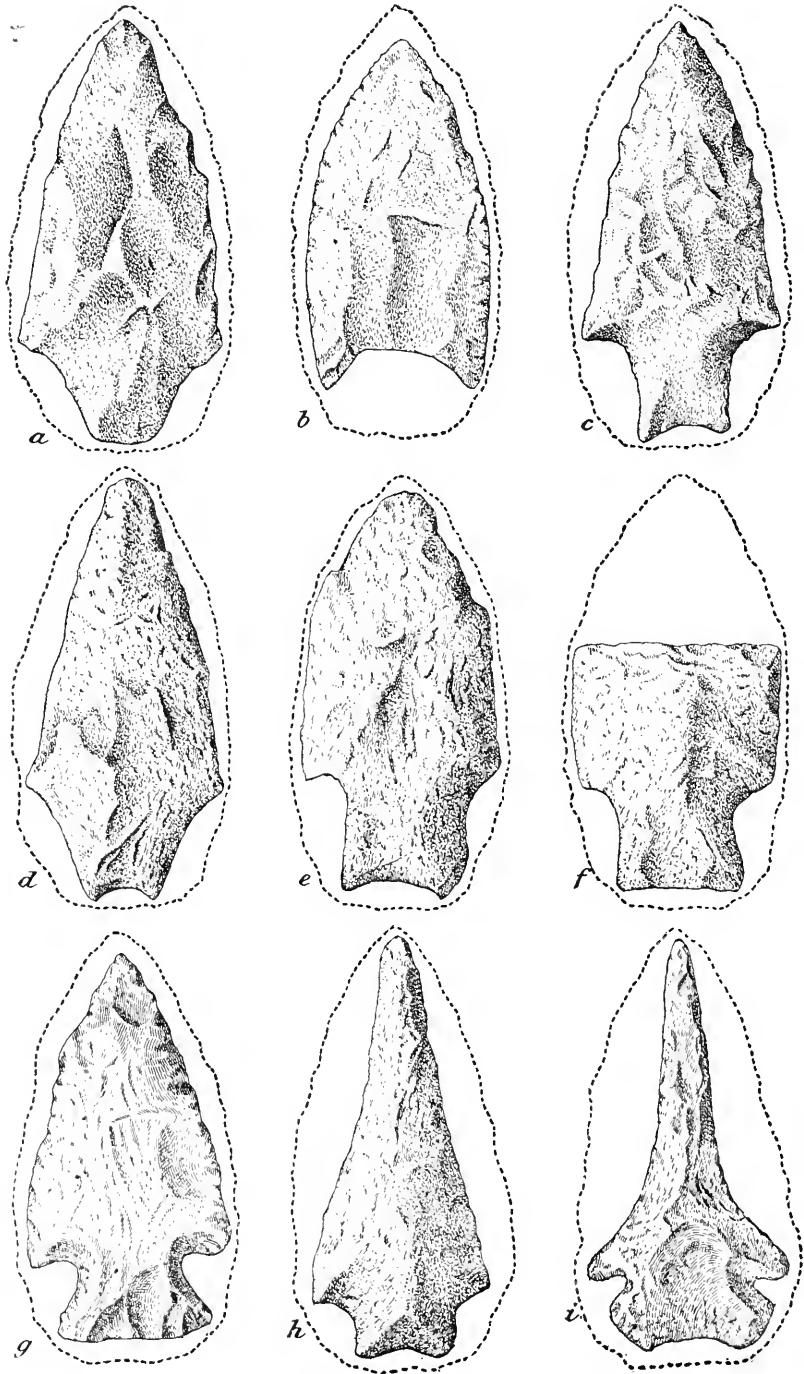


Fig. 608. S. 1-1.

Various forms of complete specimens, the dotted outline representing the primary stage in the process of manufacture. He says (page 83) "Their most important characteristic is their general shape, nearly all being referable to origin through the leaf-shape blade. Fill out the outline of almost any specimen, large or small, and the blade form is restored."

The hammer-stones with which this first work was done, are not to be counted. They exist on nearly every village and camp site of America and exhibit varied surfaces, from ones little used to old scarred and pitted veterans no longer useful. In the series presented (Figs.609-10-11), I show those illustrated by Prof. Holmes in his plate, LXIX.

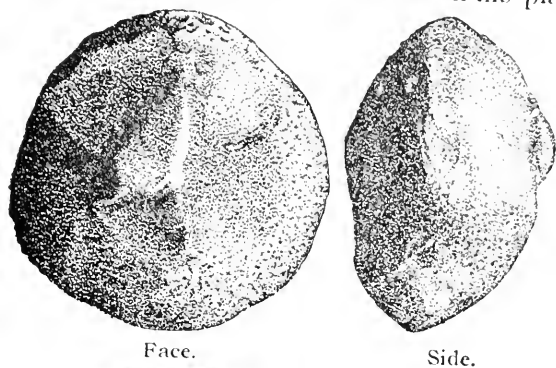


Fig. 609. S. 3-4. The surface is partly battered into roundness.



Fig. 610. S. 3-4. This one has a well defined pit and is more highly specialized than Fig. 609.

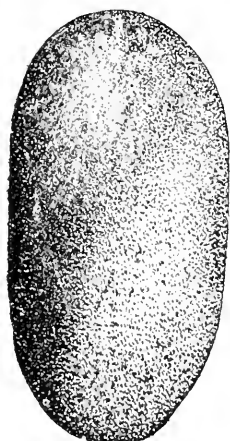


Fig. 611. S. 3-4. Much reduced by pecking and perhaps, in part, by abrading, and exemplifies the pitted hammer-stones characteristic of the eastern United States.

Side View.

"We are not able to say at just what point in the shaping of the blade or implement from quartzite and each of the other stones (for the point would not be uniform with all varieties) the percussion processes ceased and the pressure processes took up the work. It was certainly later in the

quartzite than in any of the others, because of its coarse grain and exceeding toughness and the consequent lack of thin and sharp edges on which the pressure tool must take hold. The pressure methods were applied somewhat as indicated in the following paragraphs.

"In the method most readily available for the final steps a blank form or a flake having the approximate shape was held firmly between the fingers and thumb of the left hand. A firm piece of bone having a rather thin edge or angle like that of a three-cornered file was taken in the right hand and set upon the sharp edge of the stone and at right angles to it so firmly that a slight cut or notch was made in the bone, then, with a quick, firm movement of the right hand, met by a similar movement of the left, the bone was made to move across the edge of the stone, in doing which it took with it a flake, varying in length, width, and depth, with the skill and power of the workman, the nature of the stone, etc. A rapid repetition of this operation, accompanied by a proper resetting of the tool, quickly reduced the piece, if it worked readily, to almost any desired outline. The same result was obtained in various other ways, but always by means of suddenly applied or spasmodic pressure. The blank form may have been held down by the fingers on the edge of a stone, and the point of the bone held in the other set so as to catch the edge of the stone to a width corresponding to that caught by the notched bone in the other position, when a quick downward pressure upon the flaking tool would remove the flake. Again, in larger work, where greater force was required to remove the flakes, a tool long enough to place against the arm or chest of the operator may have been used. In this way much additional force could be thrown into the spasmodic movement. Another device, practised by some tribes, consisted of a notched or forked bone or pincers, which was set upon the sharp edge of the blank and given a sudden twist, thus removing the flake.

"These operations apply exclusively to implements of leaf-blade type and to minute forms of other origin. The various ruder and heavier varieties of tools were shaped by percussion exclusively."

I cannot refrain from quoting Professor McGuire as he has experimented extensively with aboriginal tools. In one of his papers he tells how he made a stone axe, using stone tools:*

"The axe was then rubbed with wood and with buckskin to further polish it, but apparently without effect. The pecking occupied 55 hours and 10 minutes, which period, estimating the number of blows per minute as 140, would give over 460,000 blows required for the manufacture of the implement. This stone weighed when first received 7,625 Troy grains; the present weight is 5,143 grains; the loss therefore is 2,482 grains. This specimen, however, can hardly be taken as a fair standard of aboriginal work, for in selecting the material a workman would naturally choose a pebble as nearly the desired shape as could be procured, and thus avoid a large part of the labor. The savage, if we can believe the accounts given of him by early travelers, was not likely to make unnecessary exertion."

"In chipping something more is necessary than merely striking one stone against another.* All chipped implements show a special fracture; the weight of the hammer, its material, and its shape are all important elements to be considered; the intended implement must be struck with a certain weight and force and at a particular angle to accomplish the desired result. The quarry hammer of great weight must be used if it is desired to crush a large block of stone; the hand hammer, to reduce it still further. Often possibly, a set, or punch and hammer, or pressure alone may be used to accomplish the same purpose; then again a light bone hammer may be used to give uniformity to edges left rough by the hand hammer or to detach flakes from a brittle material."

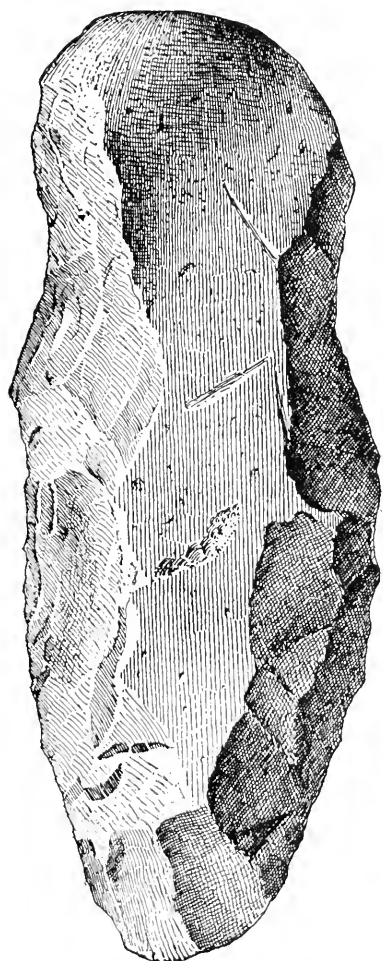


Fig. 612. S. 1-1. Rude notched axe, not polished but chipped into shape by a few blows. Such were doubtless used about the quarries for digging, grubbing up bushes, etc. From the Potomac Valley.

One of the best articles from a popular point of view on chipping, etc., was written by Mr. Sellars, a man of wide experience.† I say popular,

* American Anthropologist, Vol. VI, Page 317. J. D. McGuire.

† Observations on Stone Chipping, George E. Sellars, of Illinois. Smithsonian. Report, 85, pg. 87.

because the average student or collector cannot read all that the authorities have written. Mr. Sellars does not write technically and one may follow without becoming wearied. He had a friendship for the famous Catlin, and if any person could shed light on "how arrows were made," Catlin could.

Mr. Sellars, in referring to Catlin's observations, says: "Most of the tribes had men who were expert at flaking, and who could decide at sight the best mode of working. Some of these pebbles would split into tolerably good flakes by quick and sharp blows striking on the same point; others would break by a cross fracture into two or more pieces; these were preferred, as good flakes could be split from their clean fractured surface by what Mr. Catlin called *impulsive pressure*, the tool used being a shaft or stick of between 2 and 3 inches diameter, varying in length from 30 inches to 4 feet, according to the manner of using them. These shafts were pointed with bone or buck-horn, inserted in the working end bound with sinews, or rawhide thongs, to prevent splitting. For some kinds of work the bone or horn tips were scraped to a rather blunt point, others with a slightly rounded end of about one-half inch in diameter. He described various ways of holding the stone while the pressure was being applied. A water-worn pebble broken transversely was commonly held by being sufficiently imbedded in hard earth to prevent its slipping when held by the foot as the pressure was applied. Large blocks of obsidian or any easily flaked stones were held between the feet of the operator while sitting on the ground, the *impulsive pressure* being given to the tool grasped in both hands, a cross-piece on the upper end resting against the chest, the bone end against the stone in a slight indentation, previously prepared, to give the proper angle and to prevent slipping.

"In some cases the stone operated on was secured between two pieces or strips of wood like the jaws of a vise, bound together by cords or thongs of rawhide; on these strips the operator would stand as he applied the pressure of his weight by impulse. The best flakes, outside of the home-made, were a subject of commerce, and came from certain localities where the chert of the best quality was quarried in sheets or blocks, as it occurs in almost continuous seams in the intercalated limestones of the coal measures. These seams are mostly cracked or broken into blocks, that show the nature of the cross fracture, which is taken advantage of by the operators, who seem to have reduced the art of flaking to almost an absolute science, with division of labor; one set of men being expert in quarrying and selecting the stone, others in preparing the blocks for the flaker. This was done when the blocks were nearly right angled at the corners, by striking off the corner where the flaking was to commence, and, with a properly directed blow with a hard pebble stone, knock off of the upper edge a small flake, making a seat for the point of the flaking tool. Sometimes these blows were carried entirely across the front upper edge of the block, making a groove entirely across the edge, when the front row of flakes had been thrown off. It is the work of this operator to prepare seats for a second row, and so on. What was meant by almost absolute science was a knowledge and skill that would give the proper direction to the pressure

to throw off the kind of flake required. The staffs of these flaking tools were selected from young hard wood saplings of vigorous growth. A lower branch was utilized to form the crotch in which the blow was struck. Another branch on the opposite side was used to secure a heavy stone to give weight and increase the pressure. When the stone to be flaked was firmly held, the point adjusted to give the pressure in the required direction, the staff firmly grasped, the upper end against the chest of the operator, he would throw his weight on it in successive thrusts, and if the flake did not fly off, a man standing opposite would simultaneously with the thrust give a sharp blow with a club, it being so shaped that its force is downward close in the crotch. It has been represented to me that a single blow rarely failed to throw off the flake, frequently the entire depth of the block of stone, sometimes as much as 10 or 12 inches. The tooth or tusk of the walrus was highly prized for tips of the flakers.

"What I have thus far written is at second hand, being merely recollections of conversations at various times with the parties I have referred to, and more recently with a man who for over thirty years had been connected with a fur company, and who had lived most of that time among the Indians, and much of it as a trapper.

"What I now propose is to give some of my experimental practice in flaking and working flint (chert), and, (from a purely mechanical standpoint) some conclusions drawn from a pretty extensive examination of the waste and refuse as well as finished and partly finished work left in the aboriginal flint workshop.

"There are many places along the banks of the Ohio River and its tributaries that are not subject to the annual overflow, but are still below the occasional great floods, where the flaking process has been extensively carried on, and where cores and waste chips are abundant. At one of these places, on the Kentucky side of the river, I found a number of chert blocks, as when first brought from the quarry, from which no regular flakes had been split; some had a single corner broken off as a starting point. On the sharp, right-angled edge of several, I found the indentations left by small flakes, having been knocked off evidently by blows as described by Catlin, as a preparation for seating the flaking-tool. Most of the localities referred to are now under cultivation, but before being cleared of timber and subjected to the plow, no surface relics were found; but on the caving and wearing away of the river banks as the light earth washed away, many spear and arrow-heads and other stone relics were left on shore. After the land had been cleared and the plow had loosened the soil, one of the great floods that occur at intervals of some fifteen or twenty years, would wash away the loose soil leaving the great flint workshops exposed. It is from the stores of material left, the cores or nuclei thrown aside, caches of finished and unfinished implements and flakes, the tools and waste, vast accumulations of splints, etc., that we can, on critical examination, draw tolerably correct ideas of the mode of working pursued.

* * * * *

"Experience has taught the operator the best shape of edge to apply

the pressure to accomplish his object, and it has also taught him how to reach it in the simplest possible way. A spoon-shaped hollow on the top of a flattened log, or even a gutter or groove cut in it, furnishes the means of holding the flake firmly, the raised or high side placed in the hollow, the flat side up; with the ends of the fingers of his left hand pressed on it he holds it firmly, while with his right hand a downward pressure is given by the flaking tool which breaks off chips with a fracture of about 45 degrees from the flat surface, leaving the edge in the best possible shape for future work, and that is the condition of these cache flakes as they are found.

"In old times, before the invention and introduction of planing and shaping machines to work metals, the first and most important lesson taught to the machinist's apprentice was the use of the hand-hammer and cold-chisel. When an outer shell was to be removed from a metal casting, and its surface left in condition to be finished by file or scraper, the smoothness and regularity of that surface was essential, not only for economy in working, but accuracy of the file finish. The apprentice was taught to hold his cold-chisel and so direct the strokes of his hammer that when a chip was started the chisel should hold to it, and not be allowed to cut too deep or slip and fly out, leaving a shape that is difficult to start a fresh cut without leaving ridges or cutting deeper, in either case causing additional labor for the finisher.

"To a practical mechanic the examination of such a flint workshop as I have described—its waste chips to the partly worked flakes, the roughed out blocks, and the finished implements—reveals a line of workmanship so clear that it can be followed to the production of the same results.

"The handling of the tool and flake to form an arrow-point is as much an act requiring exactness and precision as the handling of the cold-chisel and hammer is to the machinist. The first chip thrown off is analogous to the first starting work of the cold-chisel; it is the text that must be adhered to to the end of the chapter. Holding the flake in such position that commencing at what is intended for the point of the intended work, the pressure with the flaking point is brought to bear close to the edge of the 45 degrees angle and at right angles to it; the result is a flake thrown off inclining towards the stem of the arrow-point. The seat left by this chip when thrown off is concave on the edge of the flake, the advance corner of which is the seating point for the tool to throw off the next chip, which does not entirely obliterate the concavity of the first, and the following chip leaves a serrated edge, the chips or flakes being generally parallel, which is the object of a good workman to make them. When the flat side by chipping has been reduced to nearly the required form, its edges are in the best possible shape for chipping the opposite or high side, then by alternate working from side to side, the point is finished, either leaving it with serrated edges or by after delicate work throwing off the points, leaving a smooth, sharp edge. The indentations at the base either for barbs or for thongs to secure the point to its shaft are made by direct down pressure of a sharp point working alternately from side to side, the arrow-point being held firmly on its flat face. From the narrowness of the cuts in some of the specimens,

and the thickness of the stone where they terminate, I have inclined to the belief that at the period they were made, the aborigines had something stronger than bone to operate with, as I have never been able to imitate some of their deep, heavy cuts with it; but I have succeeded by using a copper point, which possesses all the properties of the bone, in holding to its work without slipping and has the strength for direct thrust required. A soft iron or a thoroughly annealed steel point answers even a better purpose. As yet no copper has been found on this flaking ground, though a few copper beads and remnants of what appear to have been ornaments have been taken from the mounds on the ridges of the Saline, which I think is evidence that they had that metal at the earliest time work was done on this flaking bank.

"Bryce Wright, in his description of the Scandinavian knives or daggers refers to them as being most beautifully denticled with parallel flaking and serrated edges. He says: "These knives or lances are true marvels of prehistoric art, and show an amount of skill and workmanship which cannot be imitated in the present age, the art of fashioning them having been entirely lost." Sir John Lubbock, on page 104 of "Prehistoric Times," says: "The crimping along the edge of the handle is very curious." As to parallel, flakings with serrated edge, I have endeavored to show (from a mechanical view-point) that the refuse of the great flint quarries point to a mode of working that must leave the denticled markings parallel, and the edges worked from, serrated. What Lubbock speaks of as curious crimping on the edge of the handles is but the natural result of the mode of working. I have examined these Scandinavian dagger handles, and find the same appearance on the blades of large-size broken piercers, numbers of which I have found among rubbish, picked up, examined, and thrown away as imperfect specimens. Some of them have a spread, flat end or handle of over 1½ inch, with nearly square blades, evidently having been worked by down pressure from the edges corresponding to the spread end, these 45 degree flakes meeting form angles and produce the square. The interlocking of the flakes at their meeting causes the crimped appearance, in some cases not unlike a row of beads, very beautiful, but not with any such view, but simply the natural result of the mode of working.

"Here also are found massive flakes or chips of fine-grained quartzite, that teach another lesson to a seeking practical mechanic, nosing about among other accumulated refuse. These flakes are often rough on one face, showing them to be an outside scale from the stone; occasionally, fragments of large flat implements that have been classed as agricultural (hoes or spades). These fragments have not been broken by want of skill in the workmen, but from the undiscovered seams in the stone that did not show until the outer surface was thrown off. None of these fragments show any sign of use; in fact some of them have not been wrought to an edge. I have several specimens of hoes from the same ridge beyond the settlement where it would naturally be cultivated, that from their highly polished working ends, show long use. The lesson is that they are not made from great flakes but rather represent the core from which flakes have been thrown

off. Finished hoes and spades frequently have portions of natural stone partings that have not been worked off, and show them to have been worked from thin slabs. These slabs are a metamorphic thin bedded sandstone, belonging to what our state geologist, Prof. A. H. Worthen, calls the Chester group. They occur near the Saline, about 8 miles above the flaking ground, in an upheaval that has brought them to the surface with the upturned edges of the carboniferous limestone through which the salt springs flow. This is probably the source whence this quartzite was obtained, as slabs from 1 inch to 2 inches thick are found there; but there are many other locations stretching across Southern Illinois to the Mississippi River where they also occur.

"It is the large agricultural implements that I refer to as having been made from quartzite slabs, some of which are as much as 16 inches long by 6 inches and 7 inches wide at the spade-blade end. There are many smaller specimens of the same form and character that have been regularly flaked from chert, white waxy quartz, yellow and brown jasper, that do not exceed 6 or 7 inches in length, their working ends highly polished by long use in digging. It is the large hoes and spades flaked from quartzite slabs that to me are evidence of a much higher degree of intelligence and skill than the most highly-finished spear and arrow-points evince. Take an edge view of one of these large spades, and observe how accurately straight and free from wind, the edge has been carried entirely around the implement, the flattening of one side and rounding the other; then observe that the long flat very slightly depressed flakes have been thrown off at right angles to the edge, even to those curving around its digging or cutting end, which appear to have radiated from a common center. If these flakes have been thrown off by blows so struck and directed as to preserve the cleanly lined edges, as the operator has carried them in his mind, a skill must have been acquired that we cannot approach.

"In all the experiments that I have tried with a hammer, whether of stone, steel, soft iron, or copper, they have failed to produce the desired result; the seat of the flake is more conchoidal, shorter and deeper depressed, whereas the direct *percussive pressure* throws off the shape of flake that we find has been done in making these spades. If this mode has been resorted to, it necessarily required considerable ingenuity in devices for holding the stone slab firmly, while the pressure was being applied in the right direction. The wooden clamp described by Catlin may have been used. The simplest device that occurs to me that will answer the purpose is a block of wood planted in the ground, with its end grain up, cut on top into steps, the lower steps having grooves parallel with the rise of the upper step; in one of these grooves the edge of the implement is placed, its back resting against the edge of the higher step. When in this position, presenting the proper angle to the operator, a man holds it firmly while another applies the pressure. A lower step, with the edge of top are hollowed out to receive the work, while its lower end rests in an indentation in the lower step. In this manner a spade can be firmly held while its cutting end is being flaked. I do not present this as a mode that was practiced, but as a

device that answers the purpose, and I judge to be within the capacity of the ancient flint-workers, of whom there is nothing left but their chips and finished work.

"Let any one experiment with a bone point in chipping flint; he will soon discover the value of a *dry bone*, a bone free from grease that will hold to its work without slipping, a bone with sufficient hardness to resist abrasion, a bone of strength to bear the pressure, and he will value such a pointed bone, and will understand why, with such a bone, John Smith's ancient arrow-point maker '*valued his above price and would not part with it.*' I have been informed that the modern Indians free their flaking-bones from grease by burying them in moistened clay and wood ashes, not unlike the common practice of our housewives to remove grease from their kitchen floors.

"The hunter or trapper described to me the mode still in practice among the remote Indians of making flakes by lever pressure combined with percussion, that is more philosophical and a better mechanical arrangement than by the use of the flaking staff, as described by Catlin. They might utilize a standing tree with spreading roots for this purpose; a flattened root makes a firm seat for the stone, a notch cut into the body of a tree the fulcrum for the lever, either a pointed stick is placed on the point of the stone where the flake is to be split from it, its upper end resting against the under side of the lever, or a bone or horn point let into and secured to the lever takes the place of this stick. When the pressure is brought to bear, by the weight of the operation, on the long end of the lever, a second man with a stone mallet, or heavy club strikes a blow on the upper side of the lever, directly over the pointed stick or horn-point, and the flake is thrown off."

FLAKING BY HEAT THEORY.

This is held by some collectors, but it is entirely erroneous. Heat cracks and destroys flint, quartz, etc., and by no possibility could flakes be detached by the application of fire.

FLINT RIDGE QUARRIES.

I have referred to the immense deposits (pg. 345) at this place. The chert lies from 3 to 10 feet below the surface and the middle and lower parts of the bed are much purer. Prof. Fowke has thoroughly explored the Ridge. As to the method of quarrying, he says:*

"Digging away the earth with such tools as he could improvise—pointed sticks hardened by fire, antler, bone, or stone,—he came to the surface of the flint. This resisted all his efforts until he thought of the effects of heat. Placing wood upon it, he set fire to the pile. When the stone had reached a high temperature he threw cold water on it; this caused it to shatter and crack in all directions. Casting aside the fragments, he repeated the operation, until he had finally burned his way to the limestone beneath. Removing all burned portions of the flint, he next procured a quantity of fine clay and spread a thick coating on the top and sides of the stone, to prevent

*Primitive Man in Ohio, pg. 42.

injury to it. Then building a fire at the bottom of the hole, he soon burned away the limestone and the lower part of the flint stratum, leaving the top projecting. This he broke loose with large bowlders of quartz or granite; hammers of this sort, weighing from twenty to one hundred and fifty pounds, have been found in the bottoms of pits that have been cleared out. Knocking loose the clay, which had burned almost as hard as the stone, he found himself in possession of a block of clear, pure flint. By means of the same hammers he broke this into pieces of a convenient size for handling. These were carried to a spot near by, which may be termed a "blocking out" shop. Here they were further broken by smaller hammers, and brought somewhat into the shape of the implements which were to be made from them. The work was never, or very seldom, carried beyond this stage at the spot where it was begun; the subsequent manipulation was at some other place, best designated as a "finishing shop." These are characterized by quantities of small chips, flakes and spalls, broken implements, and unfinished pieces, which were unavailable by reason of some flaw or defect not discernible until the final work was begun. The finishing touches were always made by means of pressure with a bone, antler, or some other tough substance. Many finishing shops are located near the quarries, others at a distance, some of them several miles away. The principal one was near the cross-road; here a pile of fine chips, covering one fourth of an acre, and fully six feet in depth at the central portion, existed when the country was first settled by the whites, but from various causes it has been reduced until it now is all of one level. This, while the largest, is only one of several hundred such places."

To collectors who are confused by the nomenclature employed in describing different parts of the arrow-head the following plan and description prepared by Mr. Fowke will be of value.*

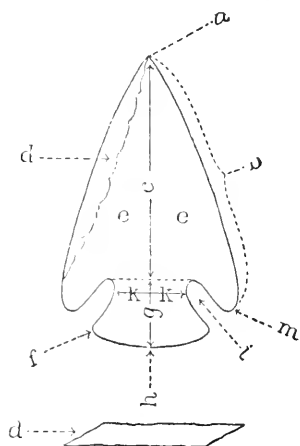


Fig. 613. S. 1-1.

- a* point.
- b* edge.
- c* face.
- d* bevel.†
- e* blade.
- f* tang.
- g* stem.
- h* base.
- i* notch.
- k* neck.
- m* barb, or shoulder.

"The only difference between barb and shoulder is that the barb is prolonged toward the base. The shoulder is called squared or rounded accord-

* Bureau of Ethnology Report. '91-2. pg. 143.

†The section below shows this more plainly.

ing to whether the edge of the implement makes an angle or a curve where drawn in to form the stem.

"In the stemless specimens the base is the end opposite the point.

"A tapering stem means one narrowing toward the base; straight, one whose sides are parallel; and expanding, one which is widest at the base."

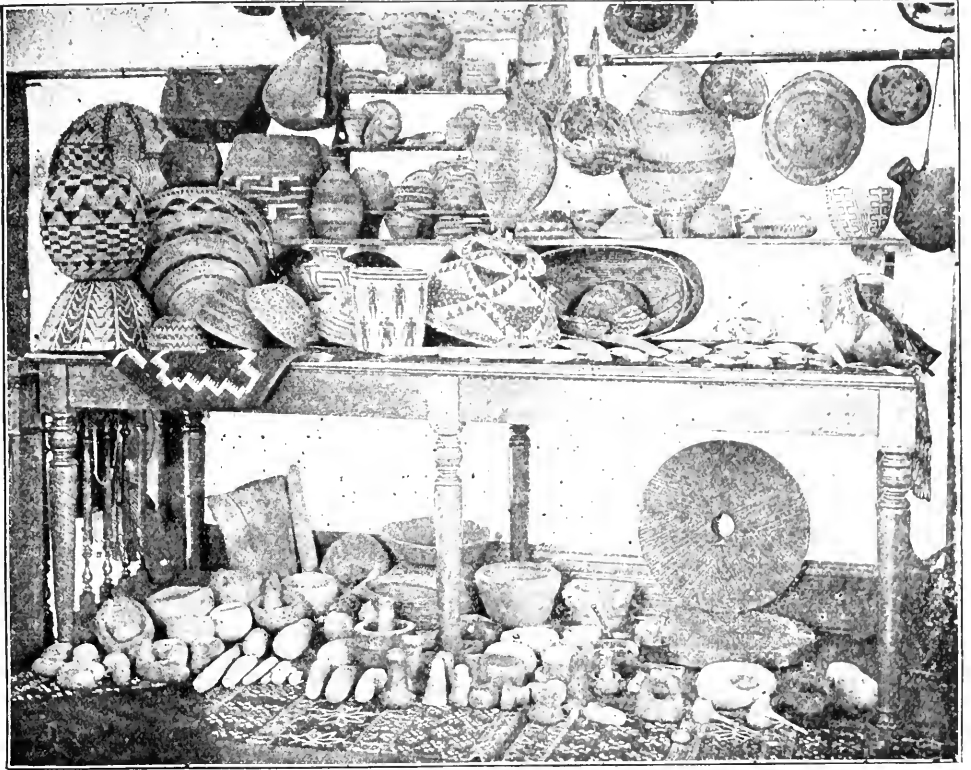


Fig. 614. S. about 1-10. Indian baskets, stone mortars, pestles and other objects from California and the Pacific coast. Collection of Mr. Frank J. Lamleron, Chicago.

SECTION XIV.

ADDITIONAL INFORMATION, CONCLUDING REMARKS, ETC.

FRAUDULENT SPECIMENS.

These are sometimes made and sold by unscrupulous persons. The various archaeological publications have frequently exposed the "dealers" who are dishonest. I have received many specimens from time to time from collectors with requests to pass upon their authenticity.

The traffic in bogus material is not extensive and the persons swindled are mostly beginners in archaeology or wealthy persons who have not exercised care in their purchases. All persons interested in the welfare of this science will agree that a law is needed to prevent fraud, protect ancient remains, etc. At present there is no way to bring counterfeiters in archaeology to justice.

To avoid fraud, buy of farmers, country collectors of reputation or the long established and honest dealers.

DETECTION OF FRAUDS.

Genuine specimens, in most cases, are covered with a coating or deposit known as patina. This is due to long exposure on the surface, or in ruins, to atmospheric agencies. Sometimes, where specimens have been carefully buried and are protected, or in cases (bone awls etc.) where the objects are impregnated with oil or grease, there is no patina. But such cases are exceptional. This patina can be seen with a magnifying glass and often by the naked eye.

One of the best tests of genuineness (second to the presence of patina) is the *looks* of the object. Old collectors will agree with me that one specimen *looks* old and genuine, whereas another does not. This difference cannot be made plain in words, and ability to detect comes with practice. The experienced collector is seldom "fooled." As a final resort, specimens may be sent to any large museum for opinion.

If students will select a bit of slate or sandstone or granite and scratch with a sharp bit of flint, then make a parallel cut with a steel blade and examine both of the cuts under a magnifying glass, they will at once recognize the difference between the flint and the steel groove. This experiment will aid them in determining the genuine from the modern make.

Again, avoid all new, fresh, shiny objects. Some slate ceremonials will have a fresh or glossy appearance, yet they may be (and doubtless are) genuine. Pipes and discoidals, of the highly finished forms, are sometimes hard to prove. But usually they are genuine. At least, the museums can tell you in case of a dispute or an uncertainty.

Very few frauds that I have seen were well made. Most of them are clumsy and awkward and carry their own condemnation.

Travel in the country, do your own field searching, buy of farmers' boys, buy out country collections and there will few (if any) frauds come into your possession.

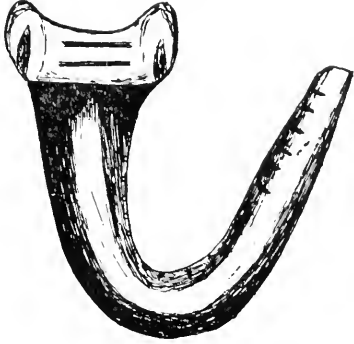


Fig. 615. S. 1-2. Found near Trenton, Ontario. Collection of G. J. Chard. Material, sandstone.

A few rare or neglected types will be presented. Fig. 615 is a typical pipe of the Iroquois country. Some of these curved and "V-shaped" pipes are found in the South, in Illinois, etc.

The pipe is almost trumpet-shaped. Such are common in the Iroquois country. Doubtless, it is modern. Mr. McGuire thinks that this form was introduced by early French traders, etc.

Mr. Willard H. Davis, of Lowell, Washington Co., Ohio, has a very



Fig. 616. S. 3-4. Dark, bluish grey flint. Found on the banks of the Muskingum river, near Marietta, Ohio, in 1887.

large collection from the lower Muskingum valley. The specimens found there do not vary greatly from elsewhere in the Ohio valley. Several of Mr. Davis' rarest things are shown in Figs. 616-7-8.

The notched flint axe is rare in the upper Ohio Valley. This specimen shows fair workmanship on the edges and is not so roughly made as most specimens of notched axes. It is as well chipped as the smaller hoes or spades of the Missouri-Illinois-Arkansas region.



Fig. 617. S. 1-1. Bluish gray flint. Found at Sardis, Ohio. Mr. Davis thinks it represents moose antlers, and I am inclined to agree with him.

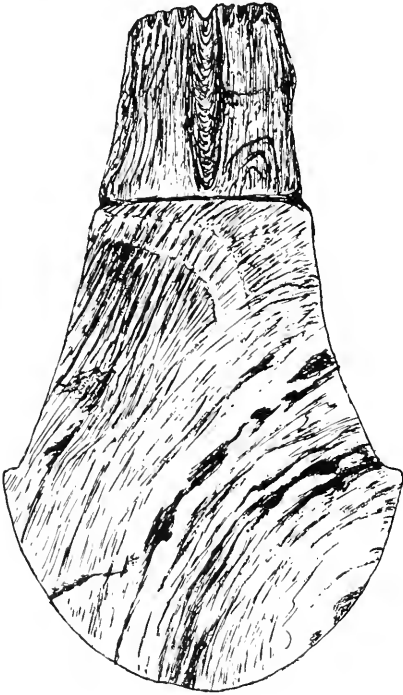


Fig. 618. S. 1-1. Found on a village site $\frac{1}{2}$ mile from Lowell, Ohio. Material, greenish-gray, banded slate.

This ceremonial (Fig. 618) is very rare. It has a slight groove at the top and a transverse groove about an inch below. The perpendicular groove intersects the horizontal one.

The edge is sharp and gracefully rounded. The stone is beautifully banded or seamed and shows various shades of green and gray. It is brought to the highest perfection of finish or polish.

Why was such an object made? For what purpose was it used? The word "ceremonial" carries no significance and does not explain away the mystery. Here is another opportunity for the archaeological wisemen of our great museums!

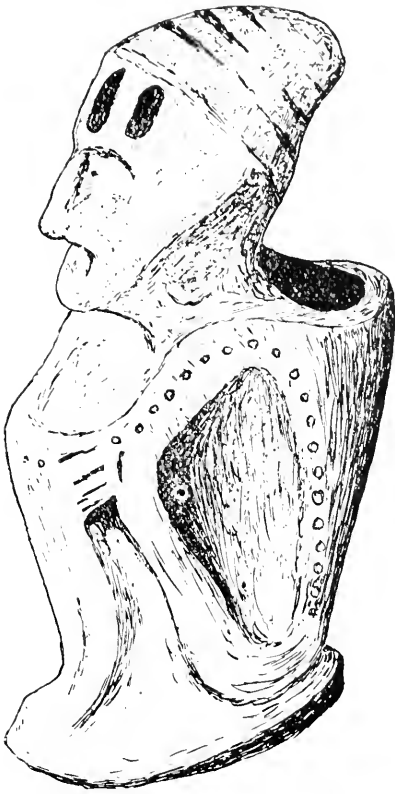


Fig. 619. S. 1-1. Found near Hamilton, Ontario. Collection of Mr. H. S. Herriman. Pipes more or less like this are figured in Dr. Beauchamps' and Mr. Boyles reports. They seem to be confined to the Iroquois country. The forms, features and concepts of the effigies are quite different from the Mound-builder sculptures of the Mississippi Valley.

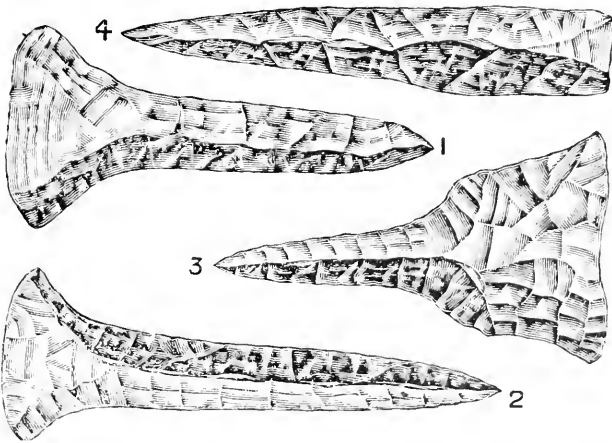


Fig. 620. S. 1-1. Drills or perforators. Missouri Historical Society collection.

Drills or perforators (some of them may be ornaments as suggested on pages 146 and 352) might have been more fully represented. In Fig. 620 I show several from the Missouri Historical Society collection. No. 4 in the group would be considered by some observers to be a slender spear-head instead of a drill.

Professor T. H. Lewis sends me a photograph of a notched spear or lance-head, a fraction less than 16 inches long, 3 inches wide and very thin. It was found near Carpentersville, Ills., and is one of the finest examples of flint chipping art that I have seen. I regret that the photograph came too late to be engraved for insertion.

Valuable metals are not found in mounds north of Florida.* That is, there are 3 exceptions to be noted. But in the 3 instances mentioned, the value of the metal was insignificant, and its presence is accounted by archaeologists to be accidental, or that the ancients did not understand the properties of the nuggets, etc. Professor Putnam found a few silver-coated copper buttons and we also took one out of the Hopewell Effigy Mound



Fig. 621 The silver and "box" $\frac{2}{3}$ size. The nuggets and other objects found in the Snake Den mounds are on exhibition in the Ohio State Archaeological and Historical Society museum at Columbus, O.

altar. A small gold ornament was found in Tennessee, I have heard. In searching for copper, lead, etc., it is but natural that the natives might have run across a bit of gold or silver and treated it (cold hammering it) as they would treat the copper.

My museum assistant in the Spring of '97 explored the Snake Den Group of mounds in northern Pickaway county, Ohio. From one of them he took out 5 nuggets of silver. Three of them were coated with black paint and two with pink ochre. The five weighed $6\frac{1}{4}$ ounces. The largest nugget, two ounces. They were in a small hollowed concretion, representing a rude stone box. This find caused great excitement among the farmers and the survey was compelled to cease its labors. All sorts of stories were in circulation as to the "buried treasure" and the museum was compelled to pay the owner of the mounds some eight times the value of the silver.

*And there they are not numerous. See an article on Gold and Silver Objects from Mounds in Florida. Geo. F. Kunz, *Am. Antiquarian*. Vol. IX, Pg. 219.

GENERAL OBSERVATIONS.

The several editors and myself have endeavored, in the preceeding pages, to give an idea of prevailing types of prehistoric implements, ornaments, etc. The comparisons which have been omitted, or such distinctions as might well be emphasized, I shall now make. Because of limited space these observations must be presented in the form of terse observations.

It will be noted that in the Southwest there are more "unknown" objects than elsewhere. The region has been sadly neglected.

Western Canada, save on the Coast, is also practically unknown archaeologically.

Great areas in Texas and the Carolinas are doubtless of interest to students, though they may not be "rich" in specimens. Yet it is unfortunate that they have not been examined.

The distribution of slate ornaments, ceremonials and pendants (charms or whatever they are) is to me most interesting. As few are found west of a line drawn north and south through the center of the Great Plains, we may say that they are confined to the Central and Eastern United States. We may further reduce the territory by adding that they are rare south of a line drawn east from Little Rock to Newport News. They are not very common in New England but are most numerous in the Middle Mississippi Valley. They furnish material for speculation to scientists as well as collectors and laymen. There are some 7 or 8 distinct types and 30 or 35 subdivisions. A careful study of their distribution and the prevailing forms might shed some light upon their purpose, etc. In the near future I hope to publish a series of Bulletins treating of the various forms.

It will be observed that several classes of ornaments and ceremonials are confined to the Iroquois country, or, at least, are more numerous there. This fact is interesting and it may indicate that some forms are modern. But I am persuaded that few of the slate objects are modern. My reasons are as follows:—

First. There are few positive references in the narratives of travelers and explorers as to this or that form of stone ornament or charm. We have little upon the Bird-stone, Crescent, Banner or Butterfly, the Bar Amulet, the Tablet, etc. A reference such as: "he wore a stone about his neck," or "stone ear ring" is not sufficiently specific to warrant us in saying with assurance, "this was the form worn." The early travelers have described the pipes, games, fabrics, manners, etc. but they have given us little on the ornamental and ceremonial (stone) class.

Second. If modern, why do we not find them in the graves of undoubtedly modern burials, along with kettles, gun barrels, glass beads, etc.?

Third. If Iroquois, (some of them) why are they most numerous in the great mound area of the Central Mississippi Valley where the confessedly Iroquois types of artifacts are exceedingly rare?

Mound explorers of experience recognize distinctions which are difficult to impart to casual observers. I know that some of the authorities who have never opened mounds or graves will smile when I say that some mounds *seem* old and others do not. Waiving the question of two forest

growths there are certain mounds in every valley which are unquestionably old. If positive proof is demanded it cannot be given. The explorer can only retort, "prove the contrary." Let us base the argument on the Ohio Valley where most work has been done. There are certain hard clay mounds, also high mounds of loam, in which the base or bottom is perfectly dry. These that I select are on hills. It is 10, 20 or 30 feet from the center of the base to the exterior in any direction. No moisture can penetrate to the skeletons. Logs have been interred so long that they are as dry as powder—they are resolved into a brown dust, or they are shriveled and shrunken to half or a third of the original diameter.

The explorer at once pronounces a mound of this sort as one of the oldest. He finds the bones surrounded by dentritic formations. They have decayed *not* from moisture but because of age. Frequently he finds only the teeth, or a part of the femur shaft, portions of the tibiae, etc. Only the hardest and strongest portions of the human body have endured.

The earth digs differently from that of the average mound. The workmen notice it—workmen of experience. It is not because the clay is so much more compact than in other tumuli but because of the age of the structure. I have found a skeleton under a high mound, protected from all atmospheric influences, and only the crowns of the teeth remained.

With these ancient burials we have found the crescent, the bar, the short bar (or foundation of Bird-stone), the pierced tablet and the common slate ornament with one perforation.*

We have found the unexplained forms—the most neglected in archaeological circles, as the galena boat-shaped (unhollowed), etc. Copper beads, bone and shell beads, tubular pipes, etc. What the other surveys have found in such mounds, I have not determined at this writing.

In addition to this testimony, there is that of the gravel knoll burials. Strange and interesting things are found in them. I have thought them to represent a very ancient culture.

What is the sum and substance of this testimony? Are all these peculiar, perhaps venerated, slate and granite ornaments-ceremonials to be set down as the work of French-Dutch-English-Spanish traders? Must we say that the mounds are post-Columbian?

To me one of the greatest indications of the aboriginal character of the ornament-ceremonial class is this: They do not resemble, on the whole, similar objects found elsewhere in the world. They are characteristically American. They do not *look* European; there is no savor of the white man about them. Now, if a trader wished to please the savage, why should he conceive some form of ornament which he had never seen before? Would an ignorant trader invent these forms? I think not. Why should the trader select the banded slates and shales usually *not* found in the locality where the specimen is picked up? And, with all our field searching, why have we not found the sites where traders—there must

*I am aware that the common slate ornament was worn in modern times and I do not consider it in my argument. It is a survival of antiquity.

have been more than one site—made these things? Why do so few of them bear traces of steel cutting tools?

In conclusion I would add that the study of prehistoric archaeology has been, to me, a pleasurable pursuit for many years. The writing of reports and the museum work sometimes becomes a little monotonous, but there is always that refuge left, where one may not only learn much but receive physical benefits—the field. Field testimony does not lie. Sometimes labels do. Reports may be wrong, theories fail and conclusions are disproven. Our pet notions are advanced with presumption, but the experience of later archaeologists upsets them. In the field the facts are ever present—silent, but powerful. They, in themselves, are undisputable. The fault lies with us if we misinterpret. We have a responsibility to bear, and it is shared, to a greater or less extent, by the most humble collector.

The specimens are gradually drifting to the permanent museums. Every year sees new museums founded. Each season an increasing proportion of archaeological cabinets finds its way into permanent quarters in fire proof buildings, and there these things can be studied and protected. The collector, who faithfully preserves with correct data the material discovered in his neighborhood, enjoys through many years his archaeologic pursuits, and when he is through with his collection presents it to a worthy institution, renders science a service and perpetuates his own name.



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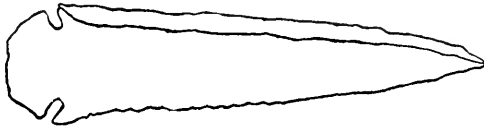
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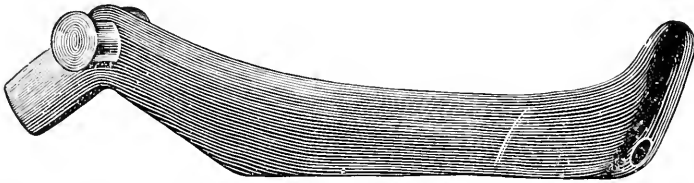
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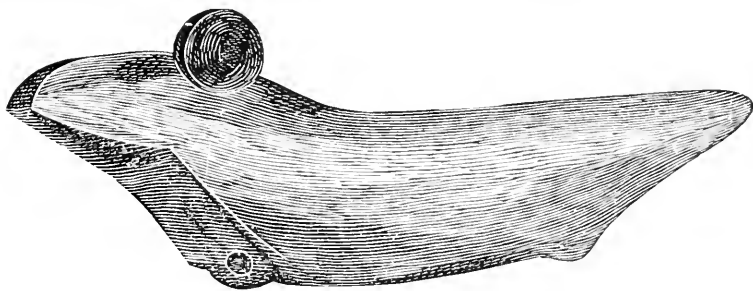
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